Edited by Mario Baldassarri,
John McCallum and Robert Mundell

GLOBAL DISEQUILIBRIUM IN THE WORLD ECONOMY

Central Issues in
Contemporary Economic Theory
and Policy

General Editor: Mario Baldassarri

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CENTRAL ISSUES IN CONTEMPORARY ECONOMIC THEORY AND POLICY

General Editor: **Mario Baldassarri**, *Professor of Economics, University of Rome, 'La Sapienza', Italy*

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Global Disequlibrium in the World Economy

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Contents

Preface 1

1 Introduction 5
Catherine Liston and John McCallum

PART I: OVERVIEW PAPERS

2 The Economic Science of Today and Global Disequilibrium 25
Maurice Allais

3 Global Disequilibrium and International Monetary Reform 39
Alexander K. Swoboda

4 The Dollar and the Policy Mix 57
Robert Mundell

5 The European Monetary System in the World Economy 79
Robert Triffin

6 The State of the World Economy: Global Imbalances, Exchange Rates and the World Debt 87
Gottfried Haberler

7 Monetarism Yesterday and Today 107
Philip Cagan

PART II: TRADE BALANCE, STOCK MARKETS AND FOREIGN EXCHANGE RATES

8 Trade Balance and Exchange Rates 125
John S. Chipman

9 Fiscal Stimulus and Employment at Home and Abroad in a Real Two-country Customer-Market Model 157
Edmund S. Phelps

PART III: THE EUROPEAN MONETARY AND COMMERCIAL AREA

10 EC 1992: Prospects and Problems 185
Herbert Giersch

11 The European Monetary System and Its Predecessors 199
Marcello de Cecco

12 Policy Coordination in Europe 213
Norbert Walter

13 Ten Reasons to Fear Fortress Europe 225
Gerard Curzon

PART IV: THIRD WORLD DEBT

14 World Disequilibrium and Third World Debt 243
Harold Lord Lever

PART V: THE REFORM OF THE INTERNATIONAL MONETARY SYSTEM

15 International Nominal Targeting (INT): A Proposal for Overcoming Obstacles to Policy Coordination 257
Jeffrey A. Frankel

16 Toward a Common Monetary Standard Through the Regulation of Exchange Rates 295
Ronald I. McKinnon

17 What Future for the International Monetary System? 323
Richard N. Cooper

18 The Global Adjustment System 351
Robert A. Mundell

Index 465

Preface

The theme of this book is "Global Disequilibrium in World Economy", a subject that to many economists seemed to be a fitting characterization of the world economy at the beginning of the 1990s.

At the heart of the analysis on Global Disequilibrium there are the problems connected with the budget deficit, rising debts and the large trade deficit of the United States. The US trade deficit problem involves the controversy between those who think the correction is dollar depreciation and those who regard it as a problem of deficient saving. But US deficits cannot be considered apart from the corresponding surpluses in West Germany, in Japan and other South Eastern Asian countries. The problem has to be considered in its global context because correction of the deficits is contingent on correction of the surpluses.

Western European integration raises another set of issues. The freeing of those financial markets, scheduled to begin in 1993, will affect the rest of the world. Will what is assumed to be good for Europe be good for the rest of the world? The same question is raised by the movement toward the creation of a common European currency. Would Europe have a better monetary system on the whole if its countries' centralized monetary policy, or would decentralized monetary policies act as a protection against big mistakes? Would a European currency become a reserve currency and, therefore, be subject to the deficits of other reserve centers? Would a common European currency create an international monetary system elsewhere?

The development of a wider and deeper degree of discrimination against the rest of the world is also a subject that requires careful attention for its economic and its political implications.

Very recently, Canada and the United States inaugurated a "Northern American free trade area." The move, which may have been influenced, if not inspired, by the bloc forming on the continent of Europe, raises problems both within and without North America. How far will the free trade movement go within the two countries? Will they find it necessary to harmonize tax systems? Will it be desirable to proceed to a complete integration of financial flows? How can a country one-tenth the size of its neighbour maintain its own independence and individuality in the face of close economic integration? Should the free trade area be expanded to include Japan and other east Asian countries or Europe? Should it discriminate against Latin America or introduce compensating preferences? What effect will the free trade area have on Canadian federalism, in particular, on French Canada's need to preserve its own heritage in an anglophone continent?

The debt load of the less developed countries (LDCs) is one of the most urgent of the problems that fit under the category of «disequilibrium». Although the issue is worldwide, it has become particularly acute and concentrated in Latin America. Since the 1982 Mexico crisis, the problem has occupied the attention of bankers, economists, and politicians. The Mexican situation was aggravated immensely by the fall in the price of oil in and following the winter of 1985–86.

The solution to the problem surely rests in some combination of debt forgiveness, guarantees to banks, new growth-fostering policies in the LDCs, and provision for their easier access to new capital and advanced technology. The plan of US Secretary of the Treasury James Baker did not solve the problem, but the one proposed by his successor, William Brady, has created new hopes of reaching a compromise; it represents a new, forward stage in US thinking and holds open the promise that growth policies can be resumed in Latin America.

The former Soviet Union is undergoing unprecedented change in its approach to economic and political organization. The new breezes raise questions for the international economy. To what extent should the western world react positively, in the sense of providing them with technology and credits?

The changing role and rising economic importance of East Asia — including not only Japan but also Korea, Taiwan, and Hong Kong — introduce the possibility of a new model for growth that could be imitated

in some of the countries of Latin America and Africa. Have the huge trade surpluses and international reserves of the East Asian countries arisen because of their high savings rates and their desire to acquire more diversified foreign assets abroad? Should these trade surpluses from capital-exporting areas be regarded as a disequilibrium situation? If so, what policies need to be taken to correct it?

The last issue to be considered was the question of international monetary reform. The flexible exchange system that replaced the Bretton Woods system resulted in excessive appreciation of the dollar in the first half of the 1980s, followed by excessive depreciation of the dollar in the second half.

The Plaza Accord of September 1985 was an attempt to depreciate the dollar; then, in February 1987 and again in December 1987, the Group of seven countries agreed to stabilize the exchange rate at two meetings in the Louvre. Since 1988, however, it has been difficult to prevent the dollar's regaining part of the ground it lost after 1985. Nevertheless, economic policy during the past three years has moved away from the flexible exchange rate system toward a system of coordinated exchange rates. The decision group based on the Group of seven has proved viable, but it leaves unspecified the future of the international monetary order. Moreover, the possibility of the development of a European currency along the lines recommended by the Delors Committee raises the question of whether the focus on the European Monetary System will detract from the need for international monetary reform in the rest of the world. It remains to be seen whether the Group of seven can maintain its decentralized character after (and if) the European countries move toward a common monetary policy.

The purpose of the book is to raise these issues in a very general way. There is still a great need for theoretical, empirical, historical and policy analysis that expands our understanding of these issues. With regards to this, we trust that these essays will further stir up the debate on the development of sound economic policies and the advancement of economic science, thus favouring a constant progress of the economic science.

John McCallum
and
Robert Mundell

Introduction

Catherine Liston - John McCallum
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The essays included in this volume on *Global Disequilibrium in the World Economy* have been divided in five sections.

The first section, includes six mayor contributions on important topics regarding the "disequilibrium"; the second one describes the problems existing in the relations between trade settlements and exchange rates.

The third and fourth sections deal with an analysis carried out on some main aspects concerning geographic areas of importance and a focus on Europe's situation and role, besides the analysis on third-world debt problems.

The fifth section includes a series of contributions dealing with the reform of the international monetary system. In this introduction, we tried to point out the most topic issues that have been proposed and the most interesting conclusions that have been reached, with a synthetic analysis for each single contribution.

The five sections are followed by an essay by Robert Mundell which ends up the volume and goes over again the historical experience and the most important theoretical aspects of the global adjustment system.

1 - The Overview Papers

The six overview papers set the stage for the more detailed analysis that follows. Nobel Laureate Maurice Allais opens this section with a case for major reforms designed to deal with destabilizing

short-term capital flows and speculation. The paper by Alexander K. Swoboda provides a lucid account of the links between global imbalances (the topic of the first section of the collection) and international monetary reform (the topic of the last section). Robert Mundell analyzes the monetary-fiscal policy mix in the United States over the past thre decades, criticizing "national monetarists" and arguing that monetary policy should be directed toward exchange rate stabilizazion.

In contrast to Mundell, Gottfried Haberler presents a case for floating exchange rates, contending that policy should target domestic objectives, and allow exchange rates to be determined in free, competitive markets. Robert Triffin argues strongly for a European Central Bank and, ultimately, a truly international monetary standard based on reserves deposited with the International Monetary Fund (IMF). Finally, Philip Cagan describes the "triumph of monetarism" in the 1970s and the rather less triumphant state in which monetarism finds itself today.

Maurice Allais provides a critique of contemporary economics and an analysis of possible reforms of monetary and financial structure. On the first point, Allais stresses that the total submission of theories to data is the golden rule that dominates any scientific discipline. He criticizes today's "pseudo-theories" characterized by the use of mathematics for its own sake and a failure to carry out appropriate empirical tests. Too often, according to Allais, researchers apply models to a single country for a short period, and true parameters are so arbitrary and so numerous that the findings obtained have practically no real meaning.

Allais then argues that frantic speculation has turned the world into a vast casino. He cites the uncontrolled creation *ex nihilo* of new means of payment, the growth of national and international debt, and the growth of unrestrained speculation in foreign exchange and security markets. Nevertheless, he adds, no one today questions the rationale of today's credit system, which is based on money creation by the banking system and the widespread policy of financing long-term credits with short-term borrowings.

Allais calls for fundamental changes, including a reform of the credit mechanism, the compulsory indexation of all forward con-

tracts, and a reform of the international monetary system. On this last point, he favours dropping the dollar as a reserve currency and returning to a system of fixed exchange rates, revisable if need be.

Alexander K. Swoboda begins by asking why we should worry about current account imbalances. After all, such imbalances may be seen as a natural mechanism for the allocation of resources among countries, and the literature on the stages of the balance of payments suggests that persistent imbalances may be both natural and desirable. On the other hand, many people believe that today's US current account deficit is a problem because it breeds protectionism, because it is an indicator of bad policies, or because its correction will become increasingly difficult the longer it persists. If only because these beliefs are held by many people, they are important however profondly misguided they may be.

Assuming, then, that the current account is a policy target, what is the appropriate policy instrument? Swoboda's answer is that governments should use fiscal policy, not monetary or exchange rate policy, to address the current account. In a two-country world, the current account depends on the difference between the fiscal policies of the two countries ($G - G^*$), irrespective of the exchange rate regime. The world's real interest rate depends on the sum of the two countries' fiscal policies ($G + G^*$). Monetary policy affects only nominal variables: the price level and nominal exchange rate under floating exchange rates and the world price level under fixed rates.

These conclusions hold in the long run; things are more complicated in a short-run context with variable output. In this case, overall output is determined by the sum of fiscal and monetary stances and the distribution of world output is determined by their differences. In Swoboda's words, «the scope for strategic interaction and conflict is clearly there».

Turning next to international monetary reform, Swoboda analyzes the main components of reform required for a return to more fixed exchange rates. On the monetary side, fixed exchange rates require both the sacrifice of monetary autonomy in $(n - 1)$ countries and a mechanism for controlling the world money supply. A number of such mechanisms are available, including "outside" reserve systems (the gold standard, special drawing rights, etc.) and

"inside" systems (the dollar standard, multi-currency reserves, etc.). These requirements are generally well understood, and Swoboda refers the reader to Ronald McKinnon's proposals (as described in this volume) for details.

A more difficult question is whether a return to fixed exchange rates requires the coordination of fiscal policies. As Swoboda's earlier analysis has indicated, current account targets require the coordination of fiscal policy differences ($G - G^*$), whereas world output or real interest rate targets require the coordination of fiscal policy sums ($G + G^*$). In general, however, these rather onerous requirements are independent of the exchange rate regime.

Is it true, then, that current account imbalances are an obstacle to international monetary reform? The problem, according to Swoboda, is not the current account imbalances as such, but rather the fiscal imbalances that they reflect. Correct these fiscal imbalances and any remaining current account imbalances should not be a cause for concern. But today's lack of fiscal discipline breeds uncertainty about the appropriate parities for exchange rates, and this uncertainty, according to Swoboda, is a major obstacle to exchange rate stabilization.

Robert Mundell analyzes the monetary-fiscal policy mix in the context of the history of the US and world economies since the 1960s. Throughout this period, Mundell has favoured the use of monetary policy to protect the balance of payments and control inflation and the restriction of tax policy to growth and employment objectives. He argues that all too often the authorities have failed to adopt this policy mix, with negative consequences for economic performance.

In particolar, Mundell asserts, the recessions of 1969-1971, 1974-1975, and 1982-1983 were all based on mistakes in the monetary-fiscal mix. The first two recessions were characterized by tight money and rising real tax rates, and the recession of 1982-1983 was caused by very tight money and a delay in the stimulus from the tax cut. In all the cases, he argues, inflation could have been controlled without recession had policy-makers shifted simultaneously to tighter money and lower taxes.

Moreover, in the aftermath of the recessions of 1969-1971 and 1974-1975, the authorities erred in allowing rapid monetary expan-

sion, which, in the mid-1970s, was further fuelled by the explosion of the Eurodollar market. Excessive US monetary expansion in the early 1970s contributed to the demise of the Bretton Woods system, and the resulting destruction of a working international monetary system eroded global discipline against inflation.

At present, the United States is as close to full employment as it has been in the past 15 years. Mundell claims that three factors have been responsible for this success: the Reagan tax cuts, enhanced US competitiveness as a result of the decline in the dollar, and the steep drop in oil prices in 1985 and 1986. Mundell argues that the pillar of US monetary policy should be the stabilization of the dollar near current levels, along the lines of the *Louvre Agreement* of February 1987. On the fiscal side, he favours reductions in the capital gains tax rate and the corporate profit tax rate to 15% and 20% respectively. If these policies were followed, he argues, the United States might achieve the remarkable feat of a decade of uninterrupted economic expansion.

Mundell's paper is followed by his answers to a series of questions on a wide variety of issues: the evolution of the international monetary system, including the possible entry of eastern bloc countries and a return to the gold standard; policies to deal with the international debt crisis; the problem of balancing the budget in the context of further tax cuts; the "new classical" view that deficits do not matter; and a series of questions about the Japanese "threat," the Japanese stock market, and Japan's buying-up of US assets.

Robert Triffin states that he is in full agreement with Karl Otto Pohl, the governor of the Bundesbank, on the question of European monetary integration. Both agree on the ultimate objective of full monetary union, under which all national currencies would disappear entirely and be replaced by a single European currency, the European Currency Unit (ECU). Participating countries would have to agree, however, on two essential points: the joint pursuit of price stability as well as exchange rate stability and the independence of the European central bank from political pressure from member governments. Unless these conditions were satisfied, Europe would face the major danger that surplus countries would be forced to import the inflation of deficit countries.

Turning to the international monetary system, Triffin argues that today's international "paper exchange standard" based mainly on the US dollar is subject to inescapable defects that have been known for many years. The system permits the United States to run excessive and persistent balance of payments deficits, thereby generating inflationary increases in world reserves. The fact that only the richest country in the world is granted such a privilege and such a responsability is as absurd economically as it is humanly. These concerns from the past have been amply justified by recent events: the cumulative current account deficits of the United States over the years 1983 through 1987 are equivalent to the total income on which must live — or die of starvation — 3.5 billion inhabitants of the Third World.

Triffin argues that it is as urgent and indispensable as ever to move toward a truly international monetary standard based on reserves deposited with the IMF. In the absence of any chance of US acceptance of such a reform, he proposes that the European countries accelerate their move to a monetary union in order to diminish their excessive dependence on "a violently fluctuating paper dollar." He also argues for the conversion of short-term dollar assets reluctantly held by central banks into perpetual bonds with adequate interest rate and exchange rate guarantees. This step would eliminate the principal danger of a collapse of the dollar. Additional loans would still be necessary in order to give the United States time in which to adjust its fiscal deficit and balance of payments deficit. The IMF and an embryonic central bank of Europe should negotiate the terms of such loans with the United States.

Gottfried Haberler analyzes three related issues: global imbalances, exchange rates, and Third World debt. He argues that initially the US deficit helped to lift the United States out of recession, thèreby restoring international confidence in the United States. On the other hand, he also argues that the deficit should be phased out over the next three to five years. The easiest, cheapest, and most efficient method of balancing the budget would be a stiff gasoline tax.

Although many people, including even the Pope, have commented on the "excessive fluctuations" of exchange rates in recent years, Haberler feels that floating should continue. He contends that a

large part of exchange rate volatility has been the result of volatile monetary policy. He criticizes the "open mouth" policy of Group of Seven officials regarding the appropriate level of exchange rates and argues that central bank intervention in the foreign exchange market diverts monetary policy from its proper function of maintaining price stability at home.

The basic problem with fixed exchange rates is that we simply do not know what the equilibrium exchange rate is. True, markets sometimes makes mistakes. But markets tend to correct themselves faster than governments do. The right policy, therefore, is to concentrate efforts on basic domestic objectives and leave exchange rates to be determined in free, competitive markets.

In an interesting postscript entitled *The Strong Dollar,* Haberler analyzes the surprising strength of the dollar in the first half of 1989. He emphasizes the role of the US budget deficit in this development and argues that recent international policy reactions to the strong dollar lend further support to his contention that markets are better at setting exchange rates than governments are.

Phillip Cagan recalls the "triumph of monetarism" in the late 1970s. A consensus had emerged that inflation could be reduced only if rates of money growth were reduced, and a variable denoted "*M*" came to play a crucial role in theoretical and empirical models. However, the foundation of monetarist policy of constant money growth depends on a predictable velocity, and confidence in this predictability collapsed totally with the dramatic changes in velocity in the United States in the early 1980s. Moreover, the reasons for these changes remain unclear. As a result, monetary authorities have downgraded or abolished monetary targets.

In response to these problems, some economists have called for monetary rules that would not allow any discretion to the central bank but would automatically require adjustments of the money supply to offset lagged changes in velocity. Although such rules would guarantee long-run price stability, Cagan argues that governments and central banks would not or could not resist pressures to deviate from the rule during recessions. These pressures would be substantial, since simulations suggest that there would have been sizable deviations of real GNP from trend had the rule been followed in the past. Similar

pressures stand in the way of other possible non-discretionary monetary rules, such as the gold standard.

2 - Trade Balances, Stock Markets, and Exchange Rates

Two essays are included in this section: in the first one John S. Chipman analyzes the relation existing between exchange rates and trade balance settlement, qualifying the relation linking the two variables. In the second essay Edmund S. Phelps analyzes the effects that fiscal policy has both in the country and abroad, in a model characterized by rigidity in real wages.

John Chipman argues that the doctrine that a country can improve its balance of trade by devaluing its currency is based largely on misconceptions and is valid only in limited circumstances. He begins with a review of the elasticity approach, in which he argues, first, that the theory of the effect of currency depreciation is necessarily a disequilibrium theory and, second, that the question of the consequences of altering the exchange rate cannot be answered without taking account of the different means by which it may be pegged.

Chipman then turns to the absorption approach and, within the framework of that approach, examines three mechanisms by which a currency depreciation can improve a country's trade balance. The first mechanism operates through a reduction in the real wage in a context of high unemployment. The second involves an adjustment of cash balances that leads to a temporary effect on the trade balance. The third involves the use of currency depreciation, via inflation, to lower the real value of a country's budget deficit and redistribute income from low to high savers. In the last section of his paper, Chipman analyzes data on the United States' current account, federal budget balance, and price competitiveness. He argues that there is only very slender support for the hypothesis that links the current account to price competitiveness.

Edmund S. Phelps extends his recent research with Jean-Paul Fitoussi on "structuralist" models of employment fluctuations. The

standard approach based on money wage stickiness implies that a fiscal stimulus will have an expansionary effect at home and abroad., Although empirical evidence supports this finding over a one or two year horizon, the answer is much less clear for longer time horizons. Although not persuaded by the new classical "real business cycle" theories, Phelps favours an alternative line of non-monetary models that he labels "structuralist." These models seek to explain low-frequency employment fluctuations by appeal to real wage rigidity or stickiness.

In a closed economy structuralist model, a fiscal stimulus is contractionary: its effect is to raise interest rates, thereby reducing the production of capital goods without causing any increase in the production of consumer goods. This result suggests a contractionary effect over some medium term after the initially favourable monetary effects have been worked off.

In the case of a small open economy that faces an exogenous real interest rate, Phelps' earlier analysis indicated that a fiscal stimulus would be expansionary. On the other hand, an increase in world demand that drove up the world real interest rate world lead to a contraction of employment. However, certain of these results depended on a monetary mechanism that involved a real cash balance effect. In his current paper, Phelps examines the extent to which the Fitoussi-Phelps explanation of the slump in Europe is robust to the exclusion of monetary mechanisms.

3 - The European Monetary and Commercial Area

In this section Herbert Giersch examines the prospects for Europe in 1992, highlighting the debate between market-oriented and corporatist or constructivist views on how European integration should proceed. In the following paper Marcello de Cecco analyzes the European Monetary System (EMS) in historical perspective. Then, Norbert Walter analyzes the problems connected to exchange rates and to the harmonization of fiscal policies in Europe.

The section ends on a somewhat ominous note, as Gerard Curzon expresses his fears on the subject of *Fortress Europe.*

According to Herbert Giersch, Europe's integration process is now in its last stage. By the end of 1992, the 12 members of the European Community (EC) will have abolished their border controls and completed their internal common market. As 1992 approaches, however two main European schools of thought will increasingly come into conflict. The first school, which reflects Europe's corporatist traditions, argues that regulations, taxes, norms, and standards should be harmonized before border controls are removed. In contrast, the "market approach" school argues that a more competitive environment will produce a harmonization process superior to any "planned" harmonization.

Giersch argues that the removal of border controls and the establishment of pro-competition government policies could add substantially to Europe's growth rate of trend productivity. However, realization of these opportunities for growth will not be automatic. Success will require the deregulation and liberalization of the European economy and the privatization of business and employment risks. Also, policy makers most be prepared to respond to the new opportunities — for example, by allowing monetary policy to accomodate a higher growth rate.

Giersch goes on to state that the opening of markets to more competition, domestic and foreign, should be a central component of anti-inflation strategy. He also emphasizes the need for world-market pricing of agricultural products. Farmers' resistance to this policy could be overcome by government-funded compensation for the income loss they are likely to experience.

In response to high US inflation and a volatile US dollar in the 1970s, western Europe emerged as an area of monetary and exchange rate stability. According to Marcello de Cecco, however, the image a united Europe standing up to the spendthrift habits of its monetary leader is totally false. The only country that stood up against US double-digit inflation was West Germany. The deutsche mark became an anchor of monetary stability, and the result was a sharp exchange rate appreciation and a decline in the competitive position of German industry. In order to protect its industries and industrial jobs, Germany had to terminate this era of deutsche mark appreciation. This was the motive behind its decision to join the European Monetary

System (EMS). Its currency would now be shielded from the dollar by a layer of weaker European currencies.

The other EMS members' eagerness to join the system is explained by their need to preserve intra-European exchange rate stability. The common policies of the EEC, particularly the Common Agricultural Policy, were based on the premise of stable exchange rates. When the dollar was allowed to float in 1971, the viability of these policies was endangered, and the need for the EMS became apparent.

De Cecco draws on historical experience to argue that Europe must achieve political unification if the process of monetary unification is to remain viable in the long run. He considers monetary arrangements of the past and argues that the Latin Monetary Union of 1865 was perhaps the one most similar to the EMS. Economic benefits under that earlier arrangement were substantial, but the agreement came apart because of political conflict between France and Italy. De Cecco argues that a similar fate awaits the EMS unless Europe achieves political integration.

Norbert Walter argues that Europe has overcome its phase of Euro-pessimism and is now in the process of weakening the "distribution coalitions" — such as farmers and miners. National governments will increasingly be able to blame unwelcome policies on higher European decision-making bodies. Hence these supra-national groups will provide Europe with competition as a public good.

Norbert Walter argues that the deutsche mark has become an effective nominal anchor, and the deems positive the *Delors Report*, suggesting that the proposed framework is similar to what already exists under the Bundesbank. In fiscal policy, the trends has been away from demand management coordination and toward supply side policies. If free trade is implemented among countries with different tax rates, distorted trade patterns will result. Hence Walter favours a harmonization process in conjunction with the dismantling of trade barriers.

Walter contends that Europe is in the midst of a transition that is often misinterpreted by outsiders. With its balanced current account, its substantial growth, and its moderate price development, Europe

does not pose a macroeconomic adjustment problem to the rest of the world.

Gerard Curzon examines the possibility that the European Community will turn in upon itself and become "Fortress Europe." The official EC position is that Europe will experience massive deregulation in order to overcome its internal inefficiencies. Its relations with the rest of the world should not be affected by this process. Curzon proposes 10 reasons for skepticism, including the entry into the EC of protectionist Spain, Portugal, and Greece; the possible continuation or intensification of non-tariff barriers in the areas of technical standards, procurement policies, and anti-dumping; the continuation of policies regarding "sensitive" manufactured goods and the classification of trading partners by a "least-favoured-nation" principle; and the possibility of increased cooperation between government and industry as a result of the EC's effort to institute a common industrial policy.

On the other hand, Curzon acknowledges that other factors may counterbalance his concerns. These factors include the possibility of a successful *Uruguay Round*; the possibility that the increased efficiency resulting from European integration may decrease the demand for protection; and the fact that Europe, being so heavily dependent on external trade, cannot afford to risk the retaliation that would likely accompany a shift to protectionism. In concluding, Curzon stresses the importance of maintaining steady pressure on the European Community to remain open to all trading partners; an open Europe is prerequisite to a frontierless world economy.

4 - Third World Debt

Two centuries ago, Adam Smith suggested that government would have to intervene in some sectors of the economy if the public interest was to be served efficiently. Harold Lord Lever believes that Smith's recommendation has been applied well in domestic economies but not so well in the global arena. In particular, he criticizes the incoherence of the multi-country power system that has emerged as US leadership has weakened.

Within this system, however little agreement there may be on

other points, it is still unanimously believed that the economic development of poorer countries — the Latin American countries in particular — can benefit advanced countries as well. In the past, this development was sustained by commercially based transfers of funds. After the 1974 oil shock, when the banks were flooded with oil dollars, these transfers increased beyond the developing countries' ability to repay. Unsurprisingly, these countries' export surpluses were far from sufficient to service their foreign currency loans. This government-approved lending spree, which came to an end in 1981, not only left the debtor countries with an unmanageable burden of debt but left the banking system itself dangerously exposed.

According to Lord Level, it is generally recognized that funds should be provided to cover at least the interest on the outstanding debt. Given that premature flows of funds from debtors to creditors are detrimental to both parties, it should also be recognized that new lending must be provided until the debtors can sustain export surpluses for extended periods. Hence, the IMF should drop its present policy of extracting these surpluses as they arise. Instead, it should seek cooperation with the debtor nations and encourage them to adopt growth-oriented reforms.

Further, the volume of lending necessary will require government backing. This lending, contrary to what many suggest, cannot be expected to come voluntarily from the banks, at least not in the near future. Private bank lending will be required, but it will have to be supported and disciplined by the institutions and governments of advanced countries. The integrity of the banking system needs to be protected.

Under Lord Lever's recommendations for the management of the debt, the IMF would approve policies that limited debtors' export surpluses to levels compatible with their economic growth. Countries that adopted such policies would then be guaranteed new funding by agencies of the advanced countries. Consequently, there would be no difficulty in generating the required borrowing through the markets. In exchange for this guarantee of full interest payments, banks could agree to transfer the debt to an appropriate international agency at a written-down book value in a future period. Cooperation among governments, central banks, and agencies would enforce the banks'

commitment to write down existing debt and execute the agreed transfers to the appropriate international agency.

5 - Reform of the International Monetary System

The works included in this section offer specific proposals in regards to a reform of the international monetary system. Jeffrey A. Frankel argues for internationally coordinated nominal GNP targeting; Ronald I. McKinnon presents his proposal for monetary coordination between the United States, Japan, and West Germany; finally Richard N. Cooper surveys a variety of alternatives and ends up by proposing a single currency for the industrialized democracies.

Jeffrey A. Frankel reviews the obstacles to successful international macroeconomic policy coordination and then describes the system that in his view has the best change of overcoming these obstacles. This system is an international version of nominal GNP targeting, and Frankel argues that it is likely to be superior to either monetary targeting or fixed exchange rates. Under Frankel's system, the Group of seven countries would meet annually and agree upon target bands for nominal GNP growth over the next year and the next five years. This system would replace the current multiple-indicator framework, and it would be a first step, though a relatively modest one, in the direction of international policy coordination.

To ensure enforceability, the targets should be public and there should not be many of them. The targeted variable(s) should be observable and controllable by government authorities on, say, an annual basis. Given real-world uncertainties, they should also be such that unexpected disturbances in economic relationships would not cause drastic harm. For example, it would have been most unfortunate had the United States signed an international agreement regarding rates of growth of *M*1 in the early 1980 — period of major and unanticipated changes in velocity. A final and crucial consideration is that anti-inflation credibility requires policy-makers to commit themselves in advance to some nominal anchor.

In the light of these considerations, Frankel argues that nominal GNP targeting clearly dominates monetary targeting, because of

velocity shifts, and is also likely to be superior to either fixed exchange rates or a fixed price of gold. Under a fixed exchange rate (gold price), shocks in the foreign exchange market (gold market) feed directly into the money supply and hence the price level. This dynamic creates and additional source of price-level instability that is absent under nominal GNP targeting. Although Frankel argues that shocks in foreign exchange markets are large, he also acknowledges the possibility (discussed at some length in the Cooper paper) that a shift to fixed exchange rates would diminish the amplitude of these shocks.

Finally, with respect to the means by which the authorities would control nominal GNP, Frankel favours the use of a monetary instrument, such as the monetary base, over the use of a fiscal instrument. For political reasons, especially in the United States, fiscal policy is too cumbersome, and in any case the comparative advantage of fiscal policy is that it controls the current account rather than nominal GNP.

Ronald I. McKinnon draws attention to the extraordinarily high volatility of both exchange rates and long-term interest rates under the post-1973 regime of floating rates. He argues that the exchange rate regime is responsible for much of the volatility of long-term interest rates. Moreover, because of the "continuing clamour" for dollar devaluation, international investors now demand much higher yields on dollar assets than on those denominated in yen or marks.

McKinnon documents the dramatic transformation of the United States from a strong-currency country in the 1960s to a weak-currency country in the 1980s. He then asks why it is that in competitiom with the seemingly more patient Japanese, Americans have become less willing to undertake the longer term, riskier investments necessary to hold markets. The answer: not because of sociology, but because of higher nominal interest rates and higher price inflation arising out of continual threats to devalue the dollar. A new monetary pact among all three blocs, which would enable the United States to borrow from the now-superior financial reputations of the Germans and the Japanese, might be the most efficient way to eliminate the expectation of dollar devaluation and reduce US interest rates to German levels.

McKinnon seeks to devise a system that would escape from the instability associated with the monetary nationalism of the past two

decades and establish a common monetary standard that would *not* depend on the hegemony of any one country. His proposal for monetary cooperation is evolutionary; it does not involve any formal loss of monetary sovereignty or any restrictions on exiting from the agreement. The proposal consists of four basic rules:

1) *set official targets for exchange rates based on purchasing power parity.* During the transition to the new system and a common inflation rate, target bands should initially be fairly wide. These bands would subsequently be narrowed to, say, plus or minus 1%;

2) *central banks should make monetary adjustments symmetrically.* To nudge exchange rates in the desired direction, the country with the weak currency would reduce its money growth and the country with the strong currency would increase its money growth. The aggregate money stock would remain approximately constant. This mechanism relies primarily on symmetrical adjustments of short-term interest rates, but the amounts of such adjustments would be reduced — speculation would become stabilizing — if central banks formally announced their exchange rate targets;

3) *official exchange intervention should be largely unsterilized.* This condition would be necessary to maintain credibility if exchange rates moved sharply away from their official targets, but once the pact became operational little intervention would be necessary;

4) *choose a consistent nominal anchor.* Collective monetary policy would be aimed at keeping national producer price indices stable. This provision would be consistent with the mutual fixing of nominal exchange rates and stability in the common price level.

Richard N. Cooper begins with a survey of past international monetary systems. He considers how each of six systems responded to two fundamental problems that any international system must address: the establishment of a mechanism through which countries can adjust to disturbances (the adjustment problem) and the provision of an internationally acceptable means of payment (the liquidity problem).

Cooper then reviews arguments for and against flexible exchange rates. Both the monetarist and the Keynesian traditions favour flexible

rates. In the monetarist view, flexible rates insulate the economy from monetary impulse, generated elsewhere in the world. The Keynesian view begins with the assumption that the system is replete with nominal rigidities and then argues that a flexible exchange rate may substitute for price or wage flexibility, thereby reducing the output costs of adjustment to shocks.

Cooper then considers a number of worrisome features of the present system of floating exchange rates. First, as James Tobin stressed, major external disturbances may require changes in the overall price level, but if governments treat the price level as a policy target this adjustment mechanism is thwarted. Second, as Dixit and Krugman argue, exchange rates may have to swing a long way in order to achieve adjustment, since industries subject to significant entry and exit costs will not respond to small movements in exchange rates. Third, uncertainties created by the high variability of real exchange rates are likely to reduce investment. Furthermore, firms will diversify their exchange rate risk by investing abroad, mainly through takeovers and buyouts, thereby reducing the level of world-wide competition. And finally, the system may encourage protectionist pressures.

The force of these arguments depends very much on whether foreign exchange markets are subject to speculative bubbles or whether observed exchange rate volatility merely reflects unstable policies and the unavoidable uncertainties in the economic system. Cooper argues that there is a growing body of evidence in favour of the former view.

The question, then, is whether there are alternative exchange rate systems that would reduce uncertainty without incurring high costs in some other dimension. Cooper reviews a number of proposals, including Tobin's proposal for a small tax on foreign exchange transactions, the Williamson-Miller proposal for target zones, and the system described in detail by McKinnon elsewhere in this volume. Cooper ends with his own much more radical proposal for a single currency for the industrialized democracies. Although Cooper acknowledges that implementing such a system would create many problems, he argues that they are likely to be less serious than the problems created by the uncertainties inherent in the present system.

Trying to synthesize the various and important contributions collected in this volume was surely a hard task, it is nearly impossible to summarize the final essay by Robert Mundell. In his *The Global Adjustment System*, the author develops his analysis in a deep and extremely wide evaluation ranging from the gold standard and its consequences to the most relevant aspects of the international adjustment mechanism and still, from an evaluation of what the classic adjustment mechanism had meant, to the analysis of the general economic equilibrium.

I - OVERVIEW PAPERS

The Economic Science of Today and Global Disequilibrium

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1. - Theory and Reality

1.1 *Economic Science, Its Theories and Models*

The essential condition of any science is the existence of regularities which can be analyzed and forecast. This is the case in celestial mechanics. But it is also true of many economic phenomena. Indeed their thorough analysis displays the existence of regularities which are just as striking as those found in the physical sciences. This is why economics is a science, and why this science rests on the same general principles and methods as physics.

All science is based on models, whether descriptive, explanatory, forecasting, or decision-making, and every scientific model entails three distinct stages: 1) statement of well specified hypotheses; 2) deduction of all the consequences of these hypotheses and nothing but these consequences; 3) confrontation of these consequences with observed data. Of these three stages only the first and third — establishing hypotheses, and confronting results with reality — are of interest to the economist. The second stage is purely logical and mathematical, that is tautological, and it is only of mathematical interest.

The model and the theory it represents must be accepted, at least temporarily, or rejected, depending on the agreement or disagreement between observed data and the model's hypotheses and implications. When neither the hypotheses nor the implications of a theory can be confronted with the real world, that theory is devoid of any scientific interest. Mere logical, even mathematical, deduction is

worthless in terms of the understanding of reality if it is not closely linked to that reality.

Total submission to experimental data is the golden rule which dominates any scientific discipline. It explains the extraordinary success of Western thought in the last three centuries. This rule is the same in economics as in physics.

Any theory whatever, if it is not verified by empirical evidence, has no scientific value and should be rejected. This is true, for example, of the contemporary theories of general economic equilibrium which are based on the hypothesis of general convexity of the fields of production, a hypothesis that is disproved by all the empirical data and leads to absurd consequences. That is also the case of the neo-Bernoullian theories of expected utility which are founded on postulates whose consequences are incompatible with observed data.

Abstraction plays an essential role in the construction of theories and their models. The role of science, in fact, is to simplify and to choose: to reduce facts to significant data and to seek their fundamental dependences. A mass of facts does not constitute a science. However, if abstraction is necessary, how we set about achieving it is essential. We can simplify reality without danger and with advantage, if, and only if, this is not likely to change the actual nature of phenomena. But, in no case whatsoever, should the concern for simplification change the essence of reality.

The claim that theory and practice are opposed is completely unjustified, because a theory is valid only insofar as it constitutes a condensed synthesis of reality. If it does not, it is purely a creation of the mind, totally artificial, and of no value from he scientific point of view. If, however, the theory is actually a condensed synthesis of reality, it is extremely useful, because it represents in succinct and easily usable form a vast amount of information of all kinds on the real phenomena of which it treats.

1.2 *Pseudo-Theories*

In examining certain contemporary theories in terms of the two requirements of scientific method — logical coherence and con-

formity with observed data — we finds two kinds of deviation: logical inconsistency, and neglect of real phenomena.

The defects common to many literary theories are the continual use of non-operational concepts, of vague and undefined words, whose meaning changes constantly within the analysis and varies from author to author; the absence of rigour in the analysis; the abundant use of more or less metaphysical expressions, which having no precise meaning, can mean anything one wants, and are thus sheltered from objections; the use of expressions charged with emotional content which, while they may ensure the popularity of their authors, cannot lend themselves to rigorous reasoning.

While many literary theories cannot be considered scientific, the same can be said of a great number of theories, purely logical wit no real link to facts. While mathematics is a tool whose mastery is extremely precious, it is, and can only be, a tool. One cannot be a good physicist or a good economist simply because one has some ability and skill in mathematics.

For almost forty-five years contemporary economic literature has developed too often in a totally erroneous direction with the construction of completely artificial mathematical models detached from reality.

Paradoxically, from the scientific point of view, incomparably more care is brought today to the mathematical elaboration of models than to the discussion of their structure, their hypotheses and the results from the point of view of the analysis of facts.

Contemporary literature offers countless examples of aberrations which flow from neglect of the essential principle that a theory is valid only if it is in agreement with observed facts, and that the only source of truth is experience.

It cannot be repeated too often: for the economist, as for the physicist, the essential objective is not to use mathematics for its own sake, but as a means of exploring and analyzing concrete reality, and consequently never to dissociate a theory from its applications.

But the abusive use of mathematics is unfortunately not the only failing in contemporary literature. Indeed, too often, it has generated a crop of pseudo-theories based on the mechanical application, devoid of any real intelligence, of econometrics and statistical techniques. All

these theories have the same characteristics: *a)* the elaboration of models of linear correlation which are in reality only *pseudo-models*, with a mathematical-statistical panoply of untamed, totally unjustified econometrics, which seem to the naive to be scientific theories, whereas they are too often just empty shells; *b)* the blind and brutal application of linear correlation programs and the tests associated with them, although these tests generally are not applicable to the cases studied; *c)* and the use of models, too often applied to a single country and for a short period, where the explanatory variables and the arbitrary parameters are so numerous that the obtained fittings can have practically no real meaning.

2. - The Monetary and Financial Institutional Structure of the Economy

2.1 *The Monetary and Financial Framework of an Economy of Markets*

The main purpose of economic activity is to satisfy the virtually unlimited needs of men using the limited resources available of labour, natural resources, and existing equipments, given the level of technological knowledge.

But, in order that such an objective may be attained, it is necessary that the economic activity should take place in an appropriate institutional framework, and it is certainly an essential task for economic science to define correctly the general principles of such a framework.

Unfortunately, experience shows that, till now and as regards the monetary and financial framework particularly, it has not been possible to achieve this task.

Indeed the major problem facing the Western economies is the problem, completely unresolved today, of economic fluctuations and the changes in the real value of money, which endanger economic efficiency, equity in income distribution, the security of employment and resource availability, and which, in the final analysis, generates social troubles. Economic instability, underproduction, iniquity, under-

employment, and the distress and misery they bring about, are the worst plagues of an economy of markets. These factors are at the origin of the best-founded and most violent criticisms of societies based on economic liberty and private property. They are all closely linked to the monetary and financial institutions of Western economics.

2.2 *The Economic Fluctuations and the Potential Instability of the Contemporary Economy*

Fluctuations in the real value of money make absolutely impossible an efficient and equitable functioning of an economy of markets. As a result its ethical justification may be questioned, especially as regard decentralized decision-taking, private ownership of property, and the principle of the private appropriation of surpluses.

In reality, the major inequities afflicting our society stem from the distortions of the income distribution that are brought about by changes in the real value of money.

The whole world economy today rests on gigantic pyramids of debts, each supporting its neighbour in a fragile equilibrium. Never in the past has there been such a piling up of promises to pay. Never, doubtless, has it been so difficult to cope with it.

Whether it be on currencies or stocks, frantic speculation has turned the world into a vast casino in which gaming tables are spread all over the places. Both the game and the bidding, with millions of players involved, simply never stop. Chicago quotations are followed by those of Tokyo, Hong Kong, London, Frankfurt and Paris. Everywhere speculation is made easier by the credit mechanism which makes it possible to purchase without paying or to sell without holding.

Indeed, all the difficulties met arise because a basic fact has been widely overlooked namely that no decentralised system founded on an economy of markets can operate properly if the uncontrolled creation *ex nihilo* of new means of payment allows the necessary adjustments to be postponed, at least for a while. This is the case whenever expenses or debts can be paid with mere promises to pay, without any effective real counterpart, direct or indirect.

The effect of the credit mechanism, as it works today, and which is based on the fractional coverage of deposits, the creation of money *ex nihilo*, and the lending at long-term of funds borrowed at short-term, has considerably amplified the disorders that occurred. All the major crises of the 19th and 20th centuries sprang from the excessive expansion of credit, of promises to pay and their monetization, and from the speculation which this expansion made possible and facilitated.

Whether foreign exchange rates or stock prices are involved, most of the time real economic data and nominal values as determined by speculation are found to move out of step with each other. Everywhere a frantic and feverish speculation is allowed, fed, and expanded by the credit mechanism, as it works today. Never in the past had it reached such a size. The continuous quotation, minute by minute, of stocks and currencies has but one result: to considerably amplify the destabilizing effects of speculation, and to engender market manipulation and fraud.

As in all the preceding periods, the credit mechanism exercises its destabilizing effects, but on an intensified scale, both nationally and internationally: 1) an accelerated monetization of debts and an increasing confusion of money with saving; 2) a rash expansion of credit; 3) the potential instability of the banking system; 4) the growth of national and international indebtedness; 5) unstable floating exchange rates; 6) imbalances in foreign trade and the threat of protectionism; 7) the growth of unrestrained speculation in foreign exchange and security markets, strengthened by the uninterrupted quotation of prices; 8) the world use, as a value unit of the dollar, whose real value is extraordinarily unstable and unpredictable; 9) the fundamental contradiction between the liberation of short-term capital movements and the autonomy of national monetary policies; 10) measures of expediency to deal with immediate threats; 11) and the potential instability of the world economy.

Up to now, a collapse has been avoided, but it is becoming ever more difficult to deal with disequilibria that nobody is really capable of mastering. As a matter of fact, there is no historical record of an instance in which the exaggerated *ex nihilo* expansion of credit has not finally culminated in its collapse.

2.3 *The Disarray and Blindness of Economic Thought*

It is certainly a great intellectual and political scandal that after the periodic recurrence of major crises for at least two centuries, our democratic societies have not yet proven capable of defining economic institutions enabling economic fluctuations to be, if not suppressed, at least considerably reduced.

From the innumerable analyses which have been produced over the past few years, only one certainty can be drawn: the deep disagreement, indeed the disarray, that prevails amongst experts, whether it be with regard to the floating exchange rate system; the dollar rise and subsequent fall; the fluctuations of interest rates; the United States trade, payments and budget deficits, and their interdependence; the role of the Euromarket; Third World debt, etc... The striking fact is the absence of a consensus not just on any sort of diagnosis, but on prospects for the near future as well.

Even more significant is the fact that no one questions the very rationale of the credit system as it operates today, i.e., the *ex nihilo* money creation by the banking system and the widespread policy of financing long-term credit with short-term borrowings, all factors which are eminently destabilizing.

No one either seems to be concerned about the monetary flows between countries being twenty to thirty times higher than those corresponding to transactions on goods and services, which demonstrates that the so-called regulation of the balance of trade by exchange rates is in fact meaningless.

No one either seems to be concerned about the average American standard of living being maintained by foreign loans at a level 3% higher that it would be in a situation of equilibrium, nor about the international use of the dollar giving the United States the benefit of che creation of money on the international level, a real tribute paid to the rich by the poor.

2.4 *The General Principles for a Reform of Monetary and Financial Structures*

In fact, on the national as well as the international level, the fundamental principles on which the monetary and financial system is

now resting must be entirely rethought and, as I showed in numerous publications, it would be relatively easy to define an appropriate international structure, provided that the principles to consider be deduced from the observation of facts and not from a priori conceptions.

Such a structure would imply at the same time a reform of the credit mechanism as it now operates, the compulsory indexation of all forward contracts, and a reform of the international monetary system.

In its principle, the reform of the credit mechanism should make impossible the *ex nihilo* creation of money and the borrowing at short term to finance loans of a longer term, and it would permit only loans at maturity terms shorter than those corresponding to the funds borrowed. Such a reform of the credit mechasnism would imply the disassociation of banking activities such as they are today and their attribution to two distinct categories of establishments: *a)* on the one hand deposit banks only taking care, at the exclusion of all loan operations, of the cash entries and payments of their clients, the corresponding expenses being billed to them; *b)* and on the other hand loan banks borrowing at given terms and loaning the funds borrowed at shorter terms. In either case the competition of the establishments concerned would assure their clients the best possible conditions.

Indexation of all forward contracts would permit at the same time the correctness of all economic calculations involving the future while assuring equitable conditions for the execution of loaning and borrowing contracts. In fact, such an indexation would permit all economic agents to use a unit of account of an invariable real value for all their decisions implying arbitration between the present and the future.

If such reforms were carried out, an appropriate reform of the international monetary system, capable of contributing to effectively favour in the future the realization of the main equilibria, could be achieved fairly easily. It would imply in particular: *a)* abandoning completely the dollar as money of account, money of exchange, and reserve currency on the international level; *b)* abandoning completely the system of floating exchange rates and replacing it with a system of fixed exchange rates, revisable if need be.

2.5 *The Incomprehension of the Necessary Reforms*

Indeed the very powerful particular interests of monetary and financial pressure groups and the ruling doctrines are not at all favourable to such reforms. The grip of some contemporary schools on economic thought naturally brings to mind the hold of certain religions. More power is needed to disseminate clear, simple and coherent ideas than to promote obscure concepts that, lending themselves to every interpretation, are all things to all men whatever their opinions and feelings.

The last four decades have been dominated by a succession of dogmatic doctrines, all sustained with the same assurance, each contradicting its just as unrealistic predecessor, and all abandoned under the pressure of facts. In place of the study of history and the thorough analysis of past errors, one has been too ready to substitute simple assertions, too often resting on pure sophisms, on unrealistic mathematical models, and superficial analyses of the circumstances of the moment.

As a matter of fact, almost all the present difficulties do result from a total misappreciation of the monetary and financial conditions of an efficient and equitable working of an economy of markets, and from an inappropriate structure of banking institutions and the financial markets. The present incapability of the economic science, as it is currently admitted and taught, to face up to these difficulties is striking.

3. - Obstacles to and Conditions for the Progress of Economic Science

I will limit myself to examining two major obstacles to the progress of economic science: the opposition to new ideas and the tyranny of dominant doctrines, vested interests and ideologies; and two very important conditions for the progress of economic science: concern for synthesis and unconditional submission to the teachings of experience.

3.1 *Opposition to New Ideas and the Tyranny of Dominant Doctrines*

Indeed, only through the blossoming of new ideas suggested by creative intuition and empirical evidence can science truly progress. But all real scientific progress comes up against the tyranny of the dominant ideas generated by the *establishments.* The more such dominant ideas are taken for granted, the more they become rooted in the psychology of men, and the more difficult it becomes to gain acceptance for a new conception, no matter how fruitful it may later turn out to be. The dominant ideas however erroneous they may be, end up, simply through continual repetition, by acquiring the quality of established truths which cannot be questioned without confronting the active ostracism of the *establishments.*

It is this resistance to new ideas that explains why in economics we had to wait to long to discover the major contributions of Dupuit, Walras, Edgeworth, Pareto, and many others.

The successful scholar is always the one who adds some marginal improvement to the dominant theories to which everyone is accustomed. If, however, a new theory falls outside of established paths, it is certain to face general opposition, whatever its justifications.

For all of these reasons, today just as yesterday, it is essential to subject the established truths constantly to a critical analysis without indulgence, always keeping in mind Pareto's statement: *The history of science boils down to the history of errors of competent men.*

3.2 *Vested Interests and Ideologies*

Secondly, it has been said that Euclid's theorem would have been bitterly contested had its implications brought financial or politicl interests into play. This is no exaggeration. By its implications the content and development of the economic science are very closely interwoven with vested interests and ideologies.

At any era of history the success of the economic doctrines was ensured, not by their intrinsic value, but by the power of the interests and the feelings which these doctrines appeared to justify. Indeed,

unfortunately, economic science is too often linked to the fate of political doctrines representative of vested interests and ideologies.

To take only three examples, the theory of maximum economic efficiency and the conditions it implies, the theory of the relation between prices and money supply, the theory of unemployment and its causes, these three theories have massive political implications. It matters little that a theory be confirmed, or not, by empirical data. It will be accepted or rejected according as its conclusions will be judged, or not, in conformity with the interests of the dominating groups. Consequently, the criterion of the truth of a theory is not anymore its conformity with the data of observation, but its conformity with the vested interests and dominant ideologies.

As a matter of fact, economic science can not aim to define what ends ought to be pursued, and it would be incapable of doing so. The question of ends must be faced by every society, but their definition is no part of economic science, or of any science, for that matter.

The ends pursued may be anything. First priority may be given to economic efficiency. Alternatively, primary concern may be for a just income distribution, however relative the concept of justice may be. The aim could be to promote the fastet possible economic growth or, contrary, first preference might be given to stability of income and employment.

Whether efficiency, equity, or security are at issue, it is impossible to state that some ends are intrinsically preferable to others. It is for society, that is to say, in the final analysis, for the men who compose it, to decide on the form of an acceptable compromise between the different ends which may be conceived.

The ends to be pursued can emerge only through the functioning of the political system. Procedures differ from time to time and from country to country, but the object is always the same, namely to implement a compromise between the aspirations of the different citizens when, as is usually the case, these aspirations are contradictory.

The economist in qualidied to answer only the two following questions: Firstly, are the economic ends pursued compatible with one another? Secondly are the means resorted to the most appropriate to achieve the ends pursued. The object of economic science is not to specify what choices should be made. Its role is only to provide

scientific information in functions of which an enlightened decision can be taken.

3.3 *A Vast Global Effort of Synthesis*

Indeed an essential conditionn for the progress of economic science is a vast global effort of synthesis.

The domain of analysis of economic science today has been so greatly enlarged that it is tending more and more to become specialized into different fields: the description of institutions, price theory, the theory of risk, monetary theory, the theory of international trade, the theory of development, business cycle analysis, are but a few of them. There are many others.

This specialization is necessary, for it seems clear that it would be beyond one man's capacity to have thorough knowledge of all these different fields. Nevertheless, it is essential to maintain concern for synthesis. Progress in each individual field is conditioned by a broad overall view, and thus such a view is essential.

In any event, the economic science is only a part of a greater whole of the social sciences. The applications of economic science inevitably have political incidences, so that the economist must also have large views in sociology, politics and history.

It is by the way of a vast global effort of synthesis that immense progress can be realized by the social sciences today. It calls very strongly for the training of economists having a broad background in history, sociology and political science, historians who are experienced in economic analysis and sociological study; and sociologists whose educations has also included economics and history.

3.4 *The Unconditional Submission to the Teaching of Experience*

The second condition for the progress of economic science, like any science, is the search for objectivity and the unconditional submission to the teaching of experience.

The essential property of error is one's belief to hold the truth. Thus he who thinks he is right may be making a mistake. Indeed he who makes a mistake is doubly ignorant. He does not know the right answer and he does not know that he does not know it.

It is never possible to pronounce finally on men or things. In the sciences, the propositions which have been considered by each century as the best established have given way to others which in their turn have been replaced under the pressure of facts. This is one of those regularities which can be extrapolated with full confidence. Some opinions which the world today takes for unquestionable will be recognized tomorrow as untenable.

Universal, or even majority agreement, cannot be considered as critera of truth. In the last analysis the essential condition for the progress of science is total submission to the teachings of experience, the only real source of our knowledge.

As my master Vilfredo Pareto said: «It is always the concrete phenomenon which decides whether a theory should be accepted or rejected. There is and can be no other criterion of a theory's truth than its more or less perfect agreement with concrete phenomena».

Conclusions

If I may conclude this address, I will merely say that I have no doubt raised many more questions than I have solved. Some of my propositions may have seemed to you quite obvious, others very questionable to say the least. But perhaps, after all, is their association capable of giving rise to further reflection on some questions which have never ceased being debated for so many years, and of contributing for a modest part to motivate the debates of this Conference.

BIBLIOGRAPHY

[1] ALLAIS MAURICE: «L'Economique en Tant Que Science», Lecture given at the opening session of the academic year 1967-1968, Geneva, Institut Universitaire de Hautes Etudes Internationales, *Collection Des Études Internationales*, n. 6, 1966, p. 26, Reproduced in *Revue d'Économie Politique*, January 1968, p. 5-30.

[2] ——: *Growth Without Inflation*, Tokyo, Center for Modern Economics, Rikkyo University, 1968, p. 86.

[3] ——: «Theories of General Economic Equilibrium and Maximum Efficiency» in ALLAIS M.: *Equilibrium and Disequilibrium in Economic Theory*, Dordrecht, Reidel Publishing Company, 1977, pp. 129-201.

[4] ——: *L'impot Sur le Capital et la Réforme Monetaire*, Paris, Herman, 1977, p. 370, 2nd ed. 1988.

[5] ——: «The So-Called Allais' Paradox and Rational Decisions under Uncertainty», in ALLAIS M. - HAGEN O.: *Expected Utility Hypothesis and the Allais Paradox; Contemporary Discussions of Decisions under Uncertainty with Allais' Rejoinder*, Dordrecht, Reidel Publishing Company, 1979, p. 714.

[6] ——: «The Credit Mechanism and Its Implications», in FEIWELL GEORGE R. (ed.): *Arrow and the Foundations of the Theory of Economic Policy*, London, McMillan, 1987.

[7] ——: *Les Conditions Monetaires d'une Économie de Marché-De la Reflexion Sur le Passé à la Preparation de l'Avenir*, Paris, Montchrestien, 1989.

[8] ——: «My Life Philosophy», *The American Economist*, 1989.

[9] ——: *Autoportraits*, Paris, Montchrestien, 1989.

Global Disequilibrium and International Monetary Reform

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Introduction

This paper explores the links between global imbalances and international monetary reform. These links are both imaginary and real. They are imaginary in the sense of the argument that international monetary reform, understood as a return to some form of fixed exchange rate regime, is impossible in the face of current-account imbalances. They are real in the sense that a viable system of international monetary relations must include a mechanism for the adjustment of current-account imbalances to sustainable levels and that adopting fixed exchange rates in the absence of such a mechanism is likely to prove self-defeating.

The paper proceeds in four steps. First, I ask why anyone should be concerned with current-account imbalances. To the extent that people are, what are the appropriate policies to deal with such imbalances? The second part of the paper attempts to answer that question and also offers some comments on inappropriate responses to such disequilibria. I argue there that the appropriate policies are essentially fiscal and structural, while monetary and exchange rate policies are largely inappropriate, irrespective of the exchange rate regime. The third part of the paper suggests that the adoption of an inappropriate policy mix is at least partly responsible for the current slow pace of international monetary reform; it also highlights a number of other reasons for that lack of progress. The argument of the concluding section is that in the long run, current-account imbal-

ances are in one sense largely irrelevant to restoring a fixed exchange rate regime and to international monetary reform.

1. - When Are Current-Account Imbalances Undesirable?

There seems to be widespread agreement that a number of today's current-account imbalances are undesirable. In particular, a US current-account deficit of some 3 to 4% of GNP is seen as at least worrying and at worst disastrous, and a Japanese or German surplus of about 4% of GNP as clearly excessive and in need of correction. Yet it is not at all obvious why and when current-account imbalances should be deemed undesirable, nor is it obvious that a country's current-account is a legitimate target of economic policy.

After all, current-account surpluses and deficits are precisely the mechanism by which real resources are transferred among countries (presumably from regions where capital is abundant to those where it is scarce). With full and symmetric information, with competitive and complete markets, and in the absence of externalities, the free movement of capital should entail optimum levels of current-accounts and an outcome for the world economy that is efficient and maximizes potential welfare. In such a world, distributive issues should be dealt with through lump-sum income transfers, and there would be almost no reason to consider current accounts as legitimate targets of macroeconomic policy. The sole exception would be from the national point of view of a country large enough to influence the rate of interest at which it borrows or lends; it might want to impose an "optimum" tax on capital movements.

Current-account deficits or surpluses are not necessarily short lived. One hypothesis is that the balance of payments naturally moves in stages or cycles; it suggests that long periods of current-account deficits are followed by equally long surplus periods as a country slowly moves from being a young debtor to being a mature creditor (1). The United States was a mature debtor nation with a trade-ac-

(1) For a recent discussion of the hypothesis, see GENBERG and SWOBODA [2] *Advise:* the numbers in square brackets refer to the Bibliography in the appendix.

count surplus and an investment-income deficit for the better part of the 1873-1914 period and a young creditor nation with a surplus on both the trade and the investment income account during the whole inter war period. Similarly, the United Kingdom become a mature creditor nation with a trade deficit, an investment income surplus, and a positive (though gradually declining) current account as early as 1875, and it basically stayed in that stage of the balance of payments cycle until the beginning of the Second World War.

Shorter-lived movements in current-accounts can be interpreted as responses to shocks to the basic determinants of the current-account. Since the current-account is the difference between income and absorption or, if you prefer, between national saving and national investment, it is possible to build, as Sachs ([5], p. 16) does, a model of a small, open economy in which the current-account is the outcome of "the behavior of far-sighted, intertemporally maximizing households and firms". In such a model, it turns out that the current account is a positive function of the excess of current over permanent income, of the excess of the domestic rate of time preference over the world interest rate (at which the country is assumed to be able to borrow and lend), and a negative function of the excess of the current over the permanent level of government spending. Explicitly introducing investment spending into this type of model suggests, in addition, that an investment boom deteriorates the current-account, the more so if the boom is the result of new investment opportunities that imply an increase in permanent output and income (and hence in current consumption).

Such a framework offers no reason to worry about the current account or to make it a target of policy. How then can one explain the fact that today's imbalances are one of the major sources of worry for both policy makers and the public at large. And why are the current accounts of major countries increasingly considered legitimate targets of economic policy? There are at least four reasons.

The first is that there may exist some distortions or market imperfections that result in an inappropriate level of national saving and/or investment or, if you prefer, that drive a wedge between the market and the social rate of interest (or of time preference). Apart from the monopoly or monopsony power that gives rise to the

optimum tax on capital movements mentioned above, there are no generally accepted and obvious sources of such distortions. One can, however, think of institutional setups that would distort borrowing and lending choices internationally. For instance, implicit or explicit guarantees on some types of loans could lead to excessive risk-taking and lending by banks or others; asymmetries of information could lead to differences between private and social rates of time preference. It is important to note, however, that such distortions do not, of themselves, justify targeting the current-account. Nor do they necessarily imply that macroeconomic policies aimed at that account should be used to deal with the problem. Ideally such distortions should be dealt with at the source; the use of macroeconomic policy to deal with them has a distinctly second-best flavour.

In fact — this is the second argument — preoccupation about the current-account may reflect the belief that it is an indicator of the appropriateness of the prevailing policy mix. This view may be the main reason people are concerned about prevailing imbalances. They are perceived as undesirable because they would not be there (or would not be there to the same extent) if the appropriate set of macroeconomic policies were being followed. In other words, imbalances are a rational response to a set of incentives that reflects inappropriate macroeconomic policies. The difficulty here is knowing what the level of surpluses or deficits would be if appropriate macroeconomic policies were being followed. Moreover, even if one could know these levels, adopting them as targets would be inappropriate unless one was sure that the correct policies were actually being pursued. The current-account is neither an instrument of economic policy nor an appropriate target; it is an endogenous variable that can, in some circumstances, be an appropriate intermediate target or indicator. Such circumstances may arise if one has reason to believe that the actual levels of current accounts diverge widely from their optimal or desirable levels.

Today people put forward at least two reasons for believing that this divergence exists; they provide the third and fourth arguments for targeting the current account. In one such view, the present current-account deficit of the United States is a source of protectionist pressure that, if heeded, could prove disastrous for the international

economic system. Some Americans argue that employment and the manufacturing sector would fare much better if net exports were higher. The argument is incorrect — or at best incomplete — since US output is close to capacity, since it is aggregate demand (net foreign demand plus domestic demand) that governs employment, and since it is relative competitiveness that allots the share of manufacturing versus that of other production in total output. Nevertheless, the very existence of a belief that current-account deficits call for protection provides a pragmatic argument for reducing the US current-account deficit, however profoundly misguided the belief may be.

The fourth reason for targeting the current account is also a pragmatic one. It is the "unsustainability" argument. The idea here is that present levels of current-account imbalances cannot be sustained in the long run. One may well wonder why this should be a reason for policy intervention since, almost by definition, a current-account disequilibrium that is unsustainable will eventually have to correct itself. The rejoinder is that the correction, if brought about by market forces without the help of a change in policies, may be unnecessarily brutal; the adjustment may well take the form of a hard landing with damaging consequences to the United States and the world economy.

Again the difficulty is defining a sustainable level of the current-account over the medium run. Yet whatever the answer, the belief that the prevailing current-account deficit is clearly unsustainable provides pragmatic argument for seeking to reduce it.

2. - Dealing with Current-Account Imbalances

Assume that, for whatever reason (legitimate or not), the level of the current-account is a target of policy. How is the desired level to be achieved? There are a wide variety of proposals, ranging from inaction (all that is needed is to wait for the *J* curve to go away; the present pattern of real exchange rates will insure approximate current-account balance in the longer run) — to ambitious comprehensive schemes for policy targeting and coordination (such as the extended target-zone proposal of Edison, Miller, and Williamson, 1987, p. 7). What many of these schemes have in common is an

emphasis on securing current-account balance by engineering real exchange rate changes. This emphasis is misplaced. If securing current-account balance is an objective of policy, the saving-investment approach suggests that the appropriate instrument is fiscal policy. Notice that the argument is not that current-account equilibrium cannot be reached without changes in fiscal policy. Rather, I am saying that doing nothing or using other instruments will either entail the sacrifice of other important policy objectives or lead to instability in the world economy (or both).

This argument has been developed fully in Genberg and Swoboda [3], [4], so I will summarize it only partially and briefly here. The first point to note is that the real exchange rate is not an instrument of policy but an endogenous variable that can, at best, serve as an intermediate target of policy. Second, calculating and achieving the appropriate real exchange rate — one compatible with the set of policies required to bring it about to serve other goals of economic policy, and at the same time to yield the desired current-account level — is a daunting task highly demanding of information and international policy coordination. Any mistakes in the calculation could be very costly in terms of cumulative instability. Third, the real exchange rate is a real variable; the implication is that its target level cannot be achieved by manipulation of a nominal instrument, such as the money supply or the nominal rate of exchange, except in the short run (when changes in nominal variables may affect real ones because of the existence of various nominal rigidities).

Economic analysis suggests that, in an open economy, fiscal policy has a comparative advantage in affecting the current-account. The rationale of this statement goes beyond the obvious observation that the current-account is the difference between national saving and national investment or the sum of the excess of private saving over private investment and of the government's budget surplus. Obviously, a change in the government's budget can have a one-for-one effect on the current-account only in very special circumstances (for example, those in the version of the Mundell-Fleming model that features a small country with perfect capital mobility version) and in the medium run. To see the sources of fiscal policy's advantage for manipulating the current account consider a two-country world in

which national monetary and fiscal policies are the four instruments of policy. The objectives of policy will differ depending on whether a fixed or a flexible exchange rate system is in place.

TABLE 1

LONG-RUN ASSIGNMENTS OF POLICY INSTRUMENTS (*)

Target	Instrument	
	Fixed E regime	Floating E regime
P		M
P^*		M^*
P_w	$M_w = M + M^*$	
E	$M - M^*$	
CA	$G - G^*$	$G - G^*$
r_w	$G + G^*$	$G + G^*$

(*) The variables are defined as:
G = government spending;
M = money stock;
P = price level;
E = nominal exchange rate;
CA = current-account;
r_w = world interest rate.
An asterisk identifies foreign variables and the subscript w world variables. The real exchange ratel $e = EP^*/P$ is endogenous under both exchange rate regimes.
Source: SWOBODA [6].

The assignment of instruments to targets is illustrated in Table 1. Those assignments are most easily understood in a long-run case where output is at full employment (and where, as a consequence, one can abstract from joint output and price level determination), although similar considerations apply in the short run. On the one hand, monetary policy affects only nominal variables — national price levels and the nominal exchange rate under flexible rates, the world price level under fixed rates. Fiscal policy, on the other hand, affects real variables. But note that if one assumes perfect capital mobility (as is done in the table), it is the sum of fiscal stances in the two regions that determines the world level of the real rate of interest, while the difference between these stances determines the current-account. In the long-run case of the table, it is obvious that it would be self-defeating to assign monetary policy to the current-account under

floating exchange rates (on the idea that a monetary expansion depreciates the domestic currency in real terms and hence improves the trade balance). It turns out, however, that even in the short run, where price rigidities are assumed, fiscal policy has a comparative advantage over monetary policy in affecting the current-account (the contrast is the two policies' effects on national output levels). This out-come is obvious in the simple Mundell-Fleming small-country model: assuming perfect capital mobility, the effect of an increase in government spending is to deteriorate the current-account by the same amount and to leave the level of output unaffected while the effect of a monetary expansion is to improve the trade balance and to increase output (2).

Table 1 also contains lessons, some of them familiar, about the implications of alternative exchange rate regimes for policy coordination. Fixed exchange rates require that national monetary policies (in the table, the difference between money stocks) be devoted to fixing the nominal exchange rate — to external balance, if you wish — while the overall stance of monetary policy in the world economy (the sum of national money stocks, dubbed the "world money supply") determines the world price level in the long run (or in the short run and together with fiscal policy, world nominal output). Coordination, therefore, requires that nations reach some agreement as to the appropriate levels of world prices and the world money stock and as to some mechanism for achieving those levels. Coordination of the regional distribution of fiscal policies is required to achieve a specific distribution of current-account deficits and surpluses; coordination of the overall stance of fiscal policy in the world economy is required to reach a particular level of interest rates. Note again that if the coordination of fiscal policies is to be effective, there must be some agreement as to the desirable pattern of current accounts and level of

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(2) Fiscal policy has comparative advantage over monetary policy with respect to the current account relative to the output target if the expression:

$$R = (dCA/dG)/(dY/dG) - (dCA/dM)/(dY/dM)$$

is positive. For the special case in the text, the first left-hand term tends toward infinity, the second toward zero. GENBERG and SWOBODA [4] show that R is positive for more general models of an open economy under floating exchange rates.

interest rates as well as some institutional mechanism for reaching the agreed targets (assignment rules, for example).

The same principles govern the coordination of fiscal policies whether exchange rates are flexible or fixed. What does change with the regime, of course, is monetary policy coordination. In the long run, flexible rates require no coordination of national monetary policies, each country being free to pursue its own price level and inflation targets; indeed, this autonomy of monetary policy is one of the main advantages claimed for flexible exchange rate regimes. Things are more complicated in the short run. In an integrated world economy, national monetary and fiscal policies have real spillover effects abroad (notably on output). Analytically, it is possible to aggregate the individual countries into a world model of the *IS-LM* type. Assuming that capital is perfectly mobile internationally, overall output will be determined by the sum of fiscal and monetary stances and its distribution by their difference. Yet scope for strategic interaction and conflict is clearly there.

3. - International Monetary Reform

International monetary reform could take many forms, ranging from a marginal improvement of the current semifloating exchange rate system to institution of a full-fledged, cooperatively-managed system of fixed exchange rate. The question to be asked here is, what does the analysis of the previous section suggest about the main components of reform required for a return to fixed exchange rate. The answer should suggest some of the main obstacles to such a reform.

On the monetary side, the requisites for a return to fixed exchange rates are fairly obvious: 1) a mechanism for fixing exchange rates, which inescapably means that monetary autonomy be sacrificed in (n-1) of the participating countries; and 2) some agreement on a mechanism governing the growth and composition of international reserves and hence the growth of the world money stock, the wide variety of choices available here range from "outside" reserve systems (such as gold or SDRS) to various "inside" reserve systems (dollar

standard, multicurrency reserves, and so on). Once these two requirements are credibly met, overall payments adjustment should not be a major problem insofar as it would be achieved by the automatic monetary mechanism of adjustment inherent in any fixed exchange rate system. A key word in the preceding sentence is "credibly". The adoption of a number of simple rules that could be monitored could help achieve credibility. One crucial rule would be the assignment of monetary policy to overall payments equilibrium. A second rule would have to concern the rate of growth of international reserves and of system-wide monetary agregates; of the various alternatives that suggest themselves, some are variants of McKinnon's proposals. (An additional issue for a return to fixed exchange rates, the choice of an appropriate initial level of the parities to be defended by the rules, is discussed in the concluding section of this paper).

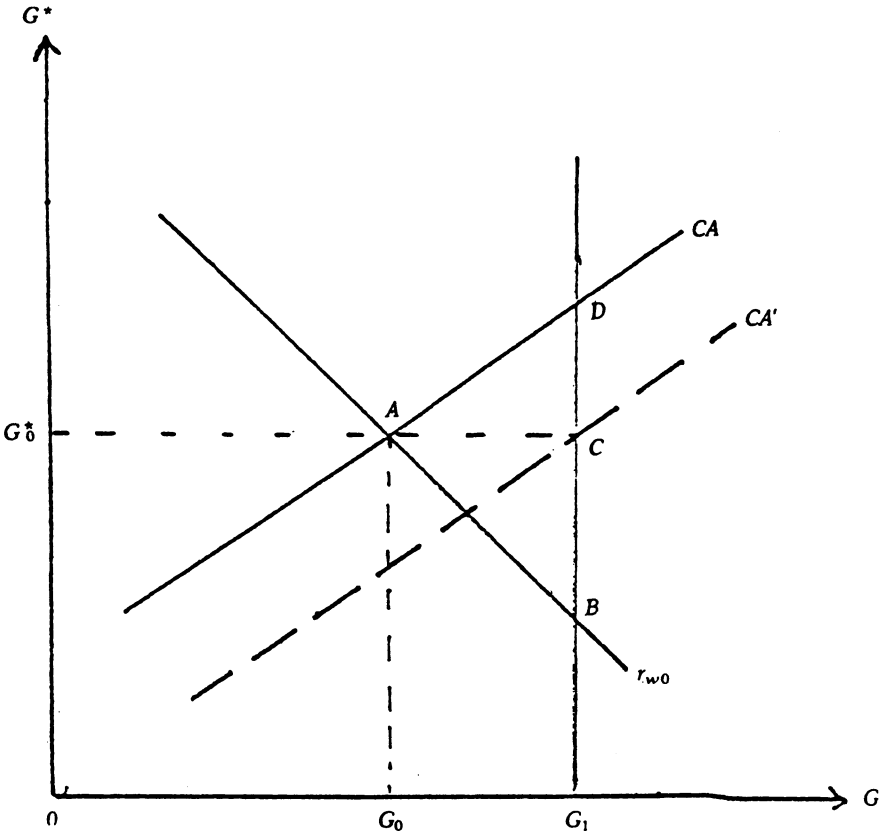
Would a return to fixed exchange rates put requirements on the running and coordination of fiscal policies? In the type of framework outlined in the preceding section, the answer, would depend on whether member countries wished to pursue internal balance policies in the short run or a real interest rate target in the long run and on whether they were seeking a particular pattern of current-accounts. Note that, as far as long-run outcomes are concerned, the issues of fiscal policy would be, in one sense, independent of the exchange rate regime.

The types of issues that would arise for fiscal policy coordination are illustrated in Graphs 1 and 2. Let G and G^* represent government spending (or more generally, the fiscal stances) in the United States and the rest of the world respectively (3). The line CA represents those combinations of (differences between) levels of government spending that yield a specific current-account level; for simplicity, assume that countries agree to target current-account balance and that it is reached on CA. The r_w lines show those combinations of government spending levels that yield a given world real rate of interest. The sum of government spending is constant along a given r_w line, which thus has a slope of 45 degrees; the further up and to the right is the line, the higher the rate of interest.

(3) For a fuller explanation of the diagrams used in Graphs 1 and 2, see GENBERG and SWOBODA [3].

GRAPH 1

NO CHANGE IN FISCAL POLICY (*)

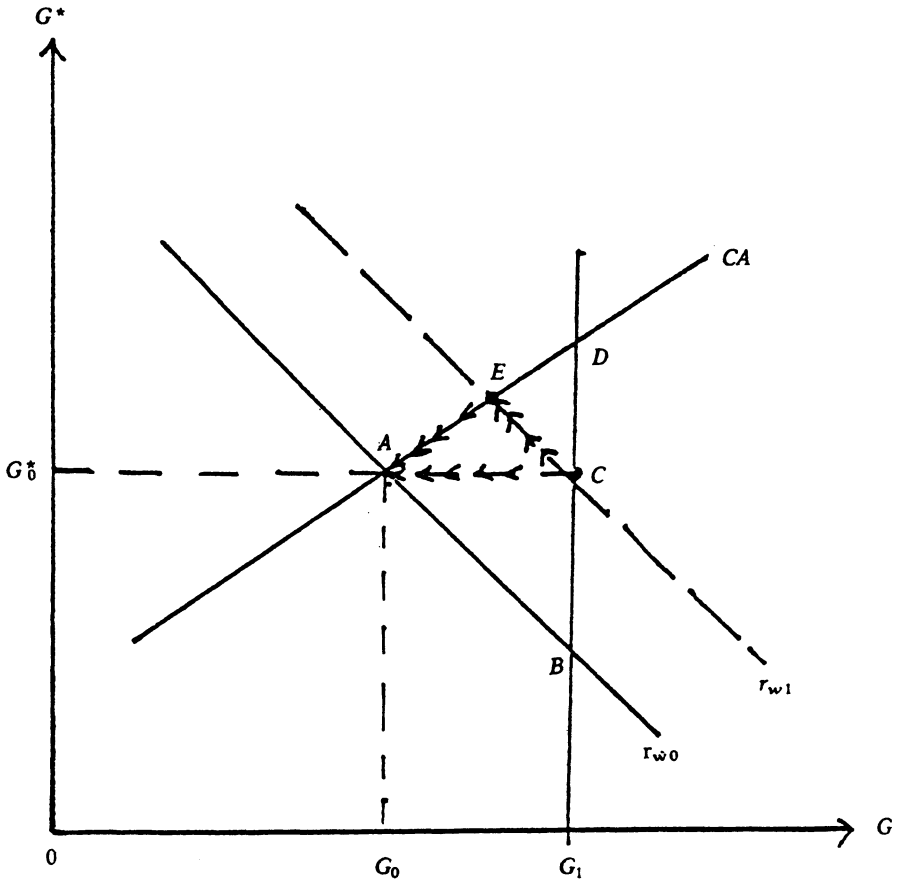


(*) For definitions of variables, see Table 1.

Consider Graph 1. Where are we today? One answer is to argue, as most people would, that the US current account is too large and so we are below the line *CA*, and that the level of interest rates is too high and so we are above the r_w line that would yield an "appropriate" interest rate level — say we are on r_{w0}. In other words, current US government spending, at G_1 is too high and we are somewhere between *B* and *D* on the vertical line above *G*. Assume for simplicity that we are at *C* — that is that the current level of government

GRAPH 2

A CHANGE IN FISCAL POLICY (*)



(*) For definitions of variables, see Table 1.

spending in the rest of the world, G_0*, is that which, in combination with G_0, would yield the targeted current account and interest rate.

Assume first that no change in fiscal stance takes place that is, G stays at G_1 and G^* at G_0*. What will happen? Presumably, current-account equilibrium will eventually be reestablished by what I call the debt-dynamics mechanism. Increasing indebtedness in the United States will lead to a risk premium on the dollar, so real interest rates

will rise in the United States and fall in the rest of the world. Net private saving will rise in the United States and fall abroad, and the *CA* line will gradually shift to the right to *CA'*. The system will come to rest at point *C*. However, world interest rates will be higher than the target. (The average will stay roughly at its initial excessive level.)

The only way to achieve the *CA* and the r_w target simultaneously is to change fiscal policy so that the world reaches point *A*. A number of recent proposals for getting there can be illustrated in terms of Graph 2 (4). The additional line, r_{w1}, indicates those combinations of government spending that would maintain the world rate of interest at its present excessive level. The issue is how to move from *C* to *A*. One suggestion, made notably by Branson [1], is, in effect, to move directly from *C* to *A*, leaving it to expansionary monetary policy in Germany and Japan both to cushion the possible recessionary impact of a reduction in US government spending in the short run and to avoid too sharp a nominal depreciation of the dollar. The *Louvre Accord*, with its emphasis on fiscal policy and its suggestion that exchange rates are about right, seems to call for a movement from *C* to *E* where the matching of the decrease in US government spending by an increase in government spending abroad would result in a return to current-account equilibrium at the currently high level of real interest rates. Proponents justify their expectation of the matching increase in government spending abroad by referring to fear of the recessionary impact of the fall in US absorption coupled with fear of the inflationary consequences of monetary expansion in the surplus countries and a general desbelief in the effectiveness of monetary expansion). A third possibility is to combine the US budget cut with a temporary fiscal stimulus abroad, if possible on the supply side. The result would amount to moving from *C* to *E* and then to *A* as the temporary stimulus is withdrawn.

Fiscal policy coordination of the type suggested here would be difficult not only because fiscal stances are as much a matter of politics as of economics but also because the degree of ignorance about the structure of economies (the exact slopes and locations of curves such as *CA* and r_w) is such that one does not know the

(4) The remainder of this paragraph is adapted from SWOBODA [6].

appropriate long-run values of instrument variables with any precision.

These problems suggest that nations must devise and adhere to some simple but robust contingent rules governing national policies, notably fiscal policies. (This suggestion is, of course, in the spirit of Mundell's famed assignment problem.) One such rule, already mentioned above, is that under a floating exchange rate system, monetary policy be assigned to national internal balance targets and fiscal policy to current-account targets, and that under a fixed exchange rate system monetary policy be devoted to overall payments equilibrium. It is more difficult to devise an assignment rule for fiscal policies that would allow simultaneous convergence to current-account equilibrium and the appropriate level of world interest rates. In a sense, the problem is analogous to the (n-1) problem in the context of monetary policies and exchange rates. One suggestion, made in Genberg and Swoboda [3] for a two country case, is to have the larger country aim its fiscal policy at the real rate of interest and the smaller one at its current account. In the framework of the United States versus the rest of the world this suggestion translates to US fiscal policy that looks after the current account and fiscal policy for the rest of the world that looks after the real rate of interest. The difficulty is, of course, that the rest of the world is not a single country!

Be that as it may, an additional general issue is relevant here: the relationship between the exchange rate regime and fiscal discipline. A floating exchange rate does seem to provide some discipline for fiscal policy since irresponsible spending will, in principle, result in an exchange crisis. The potential of exchange crises should thus impose some constraint on governments (although one may wonder whether such discipline operates for a country with large currency reserve. The fear has recently been expressed that, in a world of integrated capital markets, no such discipline would be provided under a fixed exchange rate regime (consider the case of Italy after 1990). On the other hand, the example of federal countries such as the United States and especially Switzerland suggests that such fears may be much exaggerated (5).

(5) In any case, the issue deserves serious discussion, at though it cannot be pursued here.

4. - Are Current-Account Imbalances an Obstacle to International Monetary Reform?

That comprehensive international monetary reform will not be easy to achieve should be apparent from the preceding discussion of its requisites. Disagreement about any of the coordinating mechanisms listed would constitute an obstacle. Yet these obstacles are not insurmountable in a medium-run perspective. The question is whether prevailing current-account imbalances are a serious obstacle to international monetary reform, in particular to a return to fixed exchange rates. The answer, I think, is no, but lack of fiscal discipline does constitute a major obstacle to exchange rate stabilization.

The main reason prevailing imbalances are seen as an obstacle to a return to fixed exchange rates is the emphasis on changes in real exchange rates as both a necessary consequence of the imbalances and the instrument by which they must be eliminated. The US dollar must depreciate by another 15%, so the argument goes, if the US current-account deficit is to be eliminated. Moreover, the argument continues, the sooner this happens the better; the longer the wait, the harder the landing will be. And stabilizing nominal exchange rates would prevent the necessary adjustment in the real exchange rate from taking place.

I find these arguments unconvincing. If the 15% real depreciation of the dollar is a forecast, so be it. One can imagine circumstances in which it would be an accurate one. As a policy prescription, however, it is without merit until someone specifies by what mechanism the dollar is to be brought down. Furthermore, it has the double disadvantage of distracting attention from the crucial problem — fiscal policy and private saving — and of probably fueling protectionist sentiment if, as may well be the case, the depreciation does not bring about US current-account balance. In that case, protectionism may be seen as the only instrument left since "everything else" will have been tried. In an ideal world and with a long-run perspective, a decision on exchange rate stabilization could take place irrespective of the existence of fiscal policy coordination or discipline. In reality and in the short run, however, the separation is not possible. There is the question of choosing an appropriate nominal parity for exchange rates. In a

tranquil period, the choice would be relatively easy, and mistakes would be easily corrected by relative price level movements. Today, however, uncertainty — about fiscal policy in particular — is so high that nobody can ascertain with any precision in which direction and by how much real exchange rates will have to change in the near future. Lack of fiscal discipline has thus become a major obstacle to exchange rate stabilization.

In brief the problem is not current-account imbalances but the fiscal imbalances, (or, more generally saving-investment imbalances) that they reflect. Once fiscal imbalances have been substantially redressed, however, any remaining current-account surpluses and deficits should not be a cause for worry and should not constitute an obstacle to international monetary reform.

BIBLIOGRAPHY

[1] BRANSON, W.H.: «International Adjustment and the Dollar: Policy Illusions and Economic Constraints», in GUTH W. (ed.): *Economic Policy Coordination*, Washington (DC), International Monetary Fund, 1988.

[2] GENBERG, H. - SWOBODA A.K.: «The Stage in the Balance of Payments Hypothesis Revisited», Background Paper or the, *World Development Report, 1985*, Mimeograph, 1985.

[3] —— «The Current Account and the Policy Mix under Flexible Exchange Rates», Washington (DC), International Monetary Fund, *Working Paper*, no. 70, 1987.

[4] —— 1989. «Policy and Current Account Determination under Floating Exchange Rates», International Monetary Fund, *Staff Papers*, vol. I, n. 36 March 1989, pp. 1-30.

[5] SACHS, J.: «Policy and Current Account in the Macroeconomic Adjustment Process», in CALMFORS L., (ed.): *Long-Run Effects of Short-Run Stabilization Policy*, London, MacMillan, 1983.

[6] SWOBODA, A.K.: *The Changing Role of International Policy Coordination*, Background paper prepared for the Israeli International Institute Conference, Paris, 1988.

The Dollar and the Policy Mix

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Almost two decades ago I wrote a monograph titled *The Dollar and the Policy Mix: 1971* (Mundell [5] (*)). It arose from a talk I had given in February 1971 at a US Treasury Consultants' meeting presided over by Paul Volcker, then undersecretary of the Treasury, and by Secretary John B. Connally, who had returned from his confirmation proceedings that very day. My talk was in answer to a question prepared by the late Henry Wallich, then a professor at Yale University and adviser to the Treasury, who had organized the proceedings: "Is the balance of payments deficit a menace to the dollar?"

This question was posed at a time when other economists were advocating "benign neglect" and a "passive policy" for the dollar. My answer, however, was in line with a paper I had written a decade earlier when I was at the International Monetary Fund (IMF). This paper (Mundell [4]), recommended, in a similar situation, that President John F. Kennedy follow a policy mix opposite to that then advocated by his Council of Economic Advisors. The task force report, prepared for Kennedy after the 1960 elections, and headed by Professor Paul Samuelson, had recommended low long-term interest rates to spur economic growth and a budget surplus to prevent inflation; this policy mix was tried in the first two years of the Kennedy Administration. My proposal, however, was to have tighter monetary policy to protect the balance of payments and prevent inflation, and a tax cut to

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(*) *Advise:* the numbers in square brackets refer to the Bibliography in the appendix.

increase employment and spur economic growth. Less than a year after the publication of that article, President Kennedy made his famous New York Club speech in which he reversed the policy mix. The result, delayed a year, was the famous Kennedy-Johnson tax cut of 1964, which started the United States along its magnificent full-employment growth path for 1963 through 1968. The prosperity of the 1960s was undermined, however, by a tax surcharge in the summer of 1968, which combined with tight money a year later to sow the seeds of the 1969-1971 recession.

After the 1968 election, President Richard Nixon's task force on the economy, chaired by Professor Arnold Harberger, recommended tax increases to balance the budget and tight money to stop inflation; that was in line with the monetarists' philosophy that a recession was necessary to stop inflation. The policy mix was, however, wrong. The result was a severe recession and a costly shortfall of actual GNP from potential full-employment GNP. Unemployment rose sharply, and the political outcry became so great that President Nixon shifted policies, declaring that he had become a Keynesian! The Federal Reserve eased up. The result was low interest rates, inflation, and an outflow of capital that put pressure on the dollar. By early 1971, when I gave my paper at the Treasury consultants' meeting, the recovery was underway, but the $35 an ounce price of gold was under attack. My prescription for the United States was, as it had been in 1961, tighter money to protect the balance of payments (and control inflation) and a tax cut to spur employment and growth. But now the Federal Reserve, under Chairman Arthur Burns, presumably concerned about the effects of the recession on President Nixon's chances for re-election, gunned the money supply and brought about the demise of the gold dollar.

August 15, 1971 was the day of the *Nixon Shock*. The United States dropped the connection of the dollar to gold, put a 10% surtax on imports, imposed a wage and price freeze, and attempted to persuade the rest of the world to let the dollar depreciate. There was chaos in the exchange markets for a few months but in December an agreement at the Smithsonian Institution established fixed exchange rates again, with the price of gold (and the SDR) raised by 8.571% and some currencies by over 12%. But the connection to gold had become

a fiction. The official dollar price was now $38 an ounce but with the market price much higher, no transactions took place. Money supplies were no longer linked, even remotely, to gold. Monetary discipline broke down, and the dollar price of gold soared in the free market. The fixed exchange system established at the Smithsonian without an anchor could not survive. A criterion was needed for determining where the burden of adjustment should lie, a function formerly provided by the "golden umpire". Europeans complained of the continued US balance of payments deficit and of an excessive overhang of dollars. The US government then embarked on a second devaluation of the dollar, raising the price of gold to $42.22 dollars and the SDR to $1.20635; this occurred in February 1973. It did nothing to stem the outflow of dollars, however. The Europeans then attempted a joint float of their currencies against the dollar. Lacking a central pivot, an anchor, it failed. It might have been possible to rally round the pound or even the deutsche mark or the franc, but at that time neither the British, Germans, French or Italians were willing to allow another country's currency to play the central role. The joint float thus broke up into flexible exchange rates. (Today, the European Monetary System (EMS) works as well as it does not only because of joint coordination but also because of the centralizing role of the deutsche mark.)

In June 1973, the Committee of Twenty agreed to adopt a system of floating exchange rates, abandoning international monetary reform until inflation had been brought under control. In effect, each country was left to fight inflation on its own. National monetarism, based on the policy ideas of Milton Friedman, had come into its heyday. The national monetarist idea was that each country should fix its rate of monetary expansion so that, if velocity were constant, the desired inflation rate would converge to that monetary growth rate minus the rate of economic growth. Wall Street suddenly developed a fixation with the money supply, hoping they could predict the course of the economy from those statistics. The role of central bank presidents now changed greatly. Under fixed exchange rates they had little scope for independent policy actions and no room for serious policy mistakes. Now their importance increased beyond all precedence because of the power they could exert on money markets and the rate of

inflation. The most important leader was the chairman of the Federal Reserve Board.

In 1976 the IMF endorsed a system of managed flexible exchange rates at a meeting in Jamaica leading to the second amendment to the Articles of *Agreement.* At the same time it was attempted to demote gold from its central position in the Fund and to elevate the SDR.

1. - Retrospective on the Gold Standard

Opposing the national monetarists were the internationalists who favored a global standard and regarded what was happening as a disintegration of the international monetary system. The gold standard was a mechanism that gave the world a kind of monetary unity. The great stability of gold over the centuries had depended on its widespread use by the commercial public as well as banks. As long as gold was the most important financial asset in the world, changes in demands or supplies were likely to be a tiny proportion of outstanding gold stocks, ensuring stability under normal conditions. The periods when gold was unstable were usually associated with sudden changes in government policies. With the exception of gold discoveries, the most important cause of the instability of gold was the movement of large countries or many countries at the same time to or from the gold standard. Thus in the 1870s Germany, France, the Scandinavian countries and the United States joined Britain on the gold standard, creating an increased demand for gold, causing it to appreciate and gold prices to fall; simultaneously those countries that deserted silver created inflation in the remaining silver countries. In the 1880s and 1890s South African gold discoveries did not reverse the deflation in the gold countries because of the increased demand for gold caused by the entry into the gold standard of Austria-Hungary, Russia and Japan. For a time the new monetary needs for gold balanced the rapidly increasing supplies. The turning point came in 1896. From 1896 to the First World War, the price level rose gently as a result of the vast increases in supply of South African gold. India became a major importer of gold and the Russian Empire had become the second largest holder of gold by 1914.

Another turning point came with the outbreak of World War I. The European countries went off the gold standard, but the United States remained on it throughout the war (in fact until 1933). Excess European gold was thus sent to the United States to finance the belligerents' war expenses. Gold suddenly became an inflationary standard because of the decline in demand for it in Europe. At that time the US lacked instruments to stem the inflationary influx of gold; the newly-created Federal Reserve System had no government securities to sell in the open market to prevent inflation. The US price level therefore rose sharply, doubling by 1918. Despite the post-war deflation of 1920-1921, the dollar price level was still over 35% higher than in the pre-war period, with the bulk of the world's gold reserves in the United States. There was a kind of equilibrium as long as the US was the only major country on gold. The world gold stocks were, however, insufficient to support a world-wide gold standard. When, therefore, Germany, Britain and France and most of the smaller countries returned to gold during the middle twenties, the excess demand for gold for monetary purposes imposed deflationary pressures on the world economy, particularly in countries like Britain, with an overvalued currency. The League of Nations had attempted, even in 1922, to rectify the gold shortage by recommending that countries hold foreign exchange reserves in lieu of gold; this was called the *gold exchange standard.* But stability of the gold exchange standard required close cooperation and international political harmony. The political climate in the inter-war period, however, was soured by the complications of German reparations debts and France's frantic efforts — not entirely misplaced as it turned out — to prevent a renewed German domination of Europe. The stock market collapse in 1929 disturbed this fragile system and undermined confidence. US lending to Europe, which had more than financed German reparations payments to the allies, dried up. Germany could not pay its reparations, and there was a universal gold squeeze as countries, led by France, cashed in their foreign exchange reserves. In September 1931, after a banking collapse in Central Europe, Britain went off the gold standard.

Britain was an important pivot of the international monetary system in 1931, and London was the major center of world finance.

After the pound sterling floated, a sterling area formed under British leadership; in conjunction with the 1932 Ottawa Commonwealth Conference, a zone of discrimination, called imperial preference, was created against other countries, including the United States, embittering international friendships. President Franklin D. Roosevelt, after taking the United States off the gold standard in March 1933, refused to stabilize the dollar with the exchange rates of France and Britain and other countries at the World Economic Conference in June 1933; it has been said that President Roosevelt scuttled the conference. Concurrently, the US Treasury's silver purchases created distress in countries such as China, that were on a silver standard. (The impact of currency appreciation in China was so great, it has been blamed as one of the causes of the success of the Communists in the 1930s). When the US finally went back to the gold standard in 1934, it raised the price of the metal from its historic level of $20.67 to $35 an ounce. The new price lasted until 1971; it set the tone of the international monetary system in the interim.

An exchange rate stabilization agreement was made in 1936 among the United States, Britain, and France. Known as the *Tripartite Agreement*, it was to be a precursor to the IMF and World Bank agreements made at Bretton Woods, New Hampshire, in 1944.

The United States emerged from the Second World War as a superpower and the globe's pre-eminent economy accounting for over three-quarters of world manufacturing output. At that time, the dollar was as good as gold, and the world economy was, for most purposes, on a dollar standard. History was, however, to repeat itself. The "dollar shortage" concealed an underlying gold shortage that arose as a result of wartime inflation. The US had ample gold with over 700 million ounces in 1950 — most of the world's gold stock. But as European countries recovered, they developed surpluses that they wanted settled in gold. The drain of US gold reached enormous proportions — hundreds of millions of ounces went to (or were earmarked for) countries on the continent.

Because of high dollar price levels after the postwar inflation and the Korean War, there was not enough gold to satisfy both European and US needs. By 1958, after the establishment of European convertibility and Robert Triffin's timely warnings, the United States became

concerned about its gold losses. Before that time US policy had ignored the balance of payments, acting as if the United States were a closed economy. Now it had to internationalize its economic policy, taking into account its balance-of-payment deficit. Unfortunately, President Kennedy's initial policy mix was wrong, as I indicated before, and gold losses continued. By the time the policy mix was reversed, US gold reserves were already seriously depleted. By 1971 the US gold stock was down to 290 million ounces, and on that fateful day of August 15, 1971 the United States closed the gold window. Despite inconvertibility, most countries since 1971 have held onto gold for dear life, but it has not been an effective part of the international monetary system. Most countries hold onto their gold stocks because they believe gold holdings encourage confidence in their currency, because it can be used as collateral for loans, and because of the possibility that someday gold might again be utilized as an international money. Within Europe, gold has become a part of the European Monetary System, and the European Monetary Cooperation Fund holds over 90 million ounces.

2. - Later Experience in the 1970s

Let us return to June 1973, when the Committee of Twenty decided to let each country go off on its own, according to the recommendations of the national monetarists, onto floating exchange rates. The Federal Reserve set targets for US monetary growth rates. But the Federal Reserve ignored the inflationary pressure that arose from dollar creation in Europe in the Eurodollar market. Both foreign banks and overseas branches of American banks, mainly in London, used low-powered money in the US (mainly demand deposits in New York) as high-powered reserve money in London. Because part of the US money supply became a reserve base for money creation in London, Eurodollars exploded. This created inflationary pressure in the US and in the world as a whole. The Federal Reserve had underestimated the importance of the Eurodollar phenomenon, defending itself by reference to the slow growth of M_1, and by the argument that the figures for Eurodollar deposits were exaggerated

because they involved double-counting. Blind to these fallacious arguments, the soaring Eurodollar liquidity started a wild inflation. The acceleration of commodity prices and the increase in spending provided the economic catalyst for the activation of the Organization of Petroleum Exporting Countries (OPEC). Following the Egyptian-Israeli War, OPEC was able to generate the consensus for an oil embargo that threatened to bring western industry to a standstill. The embargo was soon transformed into a quadrupling of oil prices. It is a common error to attribute the oil price increase solely to exogenous factors, the Egyptian-Israeli War and the monopolization of the industry by members of OPEC. No doubt these exogenous factors determined the timing and the exaggerated degree of the price increase. But it would not have been possible in the absence of the increase in liquidity that followed the collapse of monetary discipline when the Bretton Woods System broke down in 1971 and flexible exchange rates came into being in 1973.

The OPEC shock went far beyond the increase in prices necessary to restore equilibrium. Because it went beyond the equilibrium increase, it created cost inflation and a profit squeeze in oil-importing countries. Soon the major oil-importing countries experienced deficits in their balances of payments of a magnitude hitherto unexperienced in international trade. Corresponding to these deficits were huge surpluses in the oil-exporting countries. The transfer of wealth to a few countries with a narrow population base was the most remarkable shift of its kind ever experienced. The old poor became the new rich. Yet the deficit countries financed their oil imports by borrowing in the Eurodollar market, which caused the supply of Eurodollars to explode and spread rampant inflation all around the world.

The profit squeeze caused by the oil prices created recessionary pressure in the United States additional to that resulting from the end of the Vietnam War. Inflation had pushed individuals into higher income brackets, steadily increasing the progressivity of the income tax structure and the weight of taxes in the economy. The mild recession that had started at the end of the Vietnam war became more severe in the spring and summer of 1974.

The situation was calling out for a tax cut. In May, 1974, at a conference at the American Enterprise Institute, I recommended a

$15 billion tax cut; and in June, at a conference of the International Economic Association in Budapest, I argued that a $20 billion tax cut was needed. But President Gerald Ford assembled a conference of 30 American economists who, with one exception (Richard Cooper), recommended an increase in taxes to balance the budget! Oddly enough the tax hawks included both Keynesians and monetarists. Because the Ford Administration was dominated by monetarists (William Simon as Treasury Secretary and Alan Greenspan as Chairman of the Council of Economic Advisers) a plan was established to raise taxes. As the officials were preparing a large tax increase, I kept trying to promote the opposite action. With the recession deepening, I thought that a tax cut of at least $30 billion was required. By October, the Ford administration finally saw that a tax increase was no longer feasible, but, as the President put it, he would not do a 180 degree turn and lower taxes. This was a very expensive consistency!

In December, I presented my views at a conference in the Roosevelt Room of the Treasury; I made a case for shifting the policy mix to tight money to control the inflation, combined with a tax cut to spur growth and employment, but my arguments failed to persuade the authorities to alter their policies. One useful and lasting result, however, was that I was invited by Chairman Norm Ulman to meet with him and other members of the Ways and Means Committee. I made a case for extending to all corporations the 25% tax rate that then applied to small corporations. Ulman said that it was politically impossible to lower corporation taxes in general, but he and other members were willing to consider an extension of the low tax rate to larger, but still small, corporations; this reform came into being.

Advisers on both sides of the political fence were adamant in their opposition to a significant tax cut. The opportunity to turn the economy around was lost. Supply-side economics was not then a political force. Only in April 1975 was a tax cut of $15 billion officially proposed and passed, too little and too late to prevent the recession from deepening. More important, it was presented as a rebate, lacking any of the supply-side effects that would have stimulated economic expansion. What was needed was not only a tax cut but an indexing of the tax brackets to make them immune to inflation. The passing of the tax cut was not, however, without significance. It amounted to

complete repudiation of the proposals for tax increases made at the conference of economists only nine months before.

That the 1974-1975 recession was the most severe since the 1930s reflected several economic mistakes. The first was not having a working international monetary system to maintain global discipline against inflation. The second was the United States not adjusting its income tax brackets to compensate for inflation or rolling back tax rates from levels that were already hurting the economy. The third was in failing to take action against the recession. The argument used against my proposal for a sweeping tax cut was that it would worsen the budget deficit. As it turned out, however, the Simon-Greenspan budget deficits in the years 1974 and 1975 were the highest in peacetime history. Tax cuts geared to stimulating investment would have prevented the recession from deepening and reduced the loss of tax revenues.

From the mistakes of that recession, Supply Side Economics emerged as a force to be reckoned with. In the fall and winter of 1974 a small group, including myself, Arthur Laffer, Jude Wanniski and Robert Bartley, met regularly at a New York restaurant "Michael One" to discuss policy changes needed to bring the US and the world economy back into equilibrium. The ideas had already been formulated but there was no political constituency that could effectuate them. With the growing resentment against simultaneously high unemployment and accelerating inflation, however, one soon developed. Directly and indirectly, our ideas reached the administration. Congressman Jack Kemp played a leading role and became the leading political spokesman in Congress for these views. Wanniski's book, *The Way the World Works* [6], popularized what he called the Laffer curve, the double-valued relationship between tax revenues and the tax rate, that was drawn on a cocktail napkin at Michael One. With the aid of Paul Craig Roberts, Kemp put into legislative form the ideas for a tax cut. The Kemp-Roth bill, named after its congressional sponsors, called for a 30% cut in income tax rates. It was discussed politically during the Republican presidential primaries, and after Ronald Reagan received the nomination he adopted it for the Republican platform in the election of 1980.

That contest turned on the economic policies of Jimmy Carter's

administration in 1977 to 1980. As a result of excess monetary expansion, inflation had increased and the dollar had depreciated to all-time lows. On November 1, 1978, the Federal government had announced steps to prevent further depreciation of the dollar. But the strategy adopted was faulty. The government borrowed $30 billion of foreign currencies to support the dollar, but the Federal Reserve did not stop its inflationary monetary policies; the loan was wasted and the dollar resumed its downward trend.

The situation was now ripe for a repetition of the 1974 oil shock. Again the event was assisted by a political event, this time the Iranian revolution. The second oil shock of 1979 raised the price to $34 a barrel. As in 1974, the oil shock created a cost squeeze. The economy stagnated in 1980 with high inflation and rising unemployment, events that cost President Carter the election. The Carter policy mix of easy money, a depreciating dollar, and increasing real taxes had proved a failure. The Reagan promise to stop the inflation and cut taxes represented a reversal of the policy mix, a reversal as historically important as the reversal of the Kennedy-Johnson policy mix at the end of 1962.

3. - The Reagan Revolution

No sooner was Reagan elected than a split emerged within his administration between the supply-siders and the monetarists. The monetarists were not enthusiastic about the tax cuts but agreed to support them if they could influence other aspects of administration economic policy. The truce between the two groups allowed the passage of a modified version of the Kemp-Roth bill with a 25% cut in tax rates spread over three years, starting with 5% in October 1981, followed by 10% in July 1982 and July 1983 (cumulatively this amounted to a 23% cut in tax rates). In addition, the top income tax rate was lowered from 70% to 50% immediately. Finally the tax brackets were to be indexed for inflation to prevent it from altering real tax rates through increasing progressivity, but the indexing was scheduled to begin only in 1985.

It is important to recognize that the delay in the implementation of the tax cuts required a corresponding adjustment in monetary policy. Unfortunately the Federal Reserve, under Paul Volker, now took the position that the budget deficit, already over $50 billion, was inflationary in itself and thought that harsh monetary contraction was needed to slow the inflation. This was a serious mistake because the monetary contraction was much in advance of the fiscal stimulus from the tax cuts. The tight money policy combined with the lingering effects of the oil shock brought on the recession of 1982 to 1983. This recession was a policy mistake on the part of the monetarist Federal Reserve. It was based on a belief that a recession was needed to stop the inflation. Had the tax cut been instituted at once and the tight money been imposed as the economy expanded, the dollar would have appreciated and inflation would have slowed. Had the change in policy mix been executed correctly, the inflation could have been stopped without a major recession.

With the recession, the stock market and Dow-Jones average hit bottom at significantly below 800 in August 1982. The unemployment rate went to a post-1930s high of 11%. The best that can be said of the policy is that the soaring dollar slowed inflation and the unemployment discouraged wage increases. But the failure of the tight money policy is best indicated by the fall in output and tax revenues that greatly aggravated the budget deficit.

After the recession hit bottom in November 1982 the economy experienced an unprecedented recovery. With economic expansion and renewed confidence in the dollar, capital that had left the United States during the preceding years returned. Expectations for the dollar became bullish. This self-fulfilling expectation appreciated the dollar, which rose far beyond what was desirable in the long run from the standpoint of US competitiveness. The overshoot reduced American competitiveness and threatened to slow the recovery.

The continued appreciation of the dollar resulted from the rapid economic recovery and the renewed confidence in the dollar. The monetarists, predicting inflation because of the rapid monetary growth, failed to take into account the strength of the rising demand for dollars. The money supply expanded rapidly to meet the enormous increase in demand for dollars that arose from the restoration of

confidence. The appreciation of the dollar could have been checked by a looser monetary policy in 1983, achieved by an accumulation of foreign exchange reserves. But the administration had not yet come round to a belief in the merits of stable exchange rates. The US Treasury under Donald Regan was monetarist.

The 1984 presidential election was fought on the issues of the budget deficit and taxes. Reagan defended the tax cuts and suggested the need for further reform of the tax system. Walter Mondale campaigned on a platform of raising taxes, arguing that they would be increased no matter which party was elected. With Reagan's victory assured, the tax reform act became the most important legislation under discussion in 1985, although it was not passed until a year later. But important changes were already taking place in foreign exchange and monetary policy early in 1985. The Federal Reserve had shifted to a policy of monetary ease, which brought an end to the strong dollar. In March 1985, the dollar, having reached a high of DM 3.4 (it was DM 1.7 in 1980), stopped rising. It had fallen to DM 2.5 and Yen 239 by September 22, 1985, when the Group of five finance ministers met at the Plaza Hotel in New York, on the initiative of the new US Treasury Secretary James Baker III, and announced their agreement to coordinate a further depreciation of the dollar. The *Plaza Accord* was a milestone in recent international monetary history. It introduced an era in which other currencies are coordinated against the dollar; the system became a managed dollar system.

The administration's political reason for depreciating the dollar was its desire to preempt the protectionist forces that were developing rapidly in Congress. It was believed that devaluation of the dollar would increase exports and improve US competitiveness. The trade balance, however, is governed not by the exchange rate but by the level of expenditure compared to income, and expenditure is fed by loans from or sales of asset abroad. If to lower the value of the dollar in foreign currencies other countries have to follow tighter monetary policies, these policy changes will in themselves tend to worsen the balance of trade, not improve it. As noted, capital imports finance the excess of expenditure. If other countries continue to invest in the United States or the latter continues to borrow from abroad at the same rate as before the depreciation, expenditure will not be reduced

relative to income and the trade balance will be unaffected by exchange rate depreciation. If the lower dollar underprices capital assets and raises the marginal efficiency of capital, attracting more capital from abroad, the gap between expenditure and income may even widen and therefore worsen the trade balance. A trade deficit can only be corrected if the sum of the budget deficit and the excess of investment over saving is reduced.

Depreciation of the dollar did make the US more competitive. The fall in the dollar was only slightly offset by higher wage rates so that US labor became much cheaper relative to labor in the appreciating countries. By the end of 1985 the dollar had fallen to about Yen 200 and DM 2.0. The dollar seemed to have settled in equilibrium at this level when a quite unexpected event occurred, a fall in the price of oil. It plunged from more than $30 to $12 a barrel and recovered only to $15-$20. Japan had prepared for another oil shock and had amassed enough saving to provide a cushion. But when the price of oil went down instead of up, Japan and other oil-dependent countries experienced a remarkable improvement in their terms of trade and became the recipients of a huge transfer of wealth. This real factor led to a great appreciation of the yen and, to a lesser extent, the mark. The dollar went down steadily in 1986 until, when it had arrived at Yen 160, members of the Group of seven *decided it had fallen far enough.* On February 22, 1987, the *Louvre Agreement* set into motion a provisional stabilization plan for maintaining national currency prices of the dollar. With its agreement to stabilize exchange rates "around current levels" the *Louvre Agreement* recalls the 1936 *Tripartite Agreement* that was a precursor of the *Bretton Woods Agreement* eight years later.

Stabilization of exchange rates now led to a troublesome but familiar question: which countries should do the stabilizing? If the dollar weakens against the deutsche mark, should the Germans ease or should the Americans tighten? If policy changes in both countries are desirable, what mixture of the two countries' policies should be adopted? The correct answer depends on the goals sought. If the goal is price stability, the choice turns on whether more or less inflation is required in the world. If there is deflationary pressure in the world, the surplus country should expand; but if there is excessive inflation,

it is better for the deficit country to contract. Settling the issue, therefore, requires development of an index to measure world inflation. This problem was posed at the Group of seven summit meeting in June 1987, and further discussed in a private conference at Santa Colomba, Italy, where Robert Heller, then a member of the Board of Governors of the Federal Reserve System, suggested working out an index of inflation explicitly for use as a referee; discussion then turned on the usefulness of including gold as one of the elements of the index. At the IMF meetings in September 1987, Baker proposed the use of an index of commodity prices, going out of his way to specify that the index should include the price of gold. The Federal Reserve and the IMF began to work on such an index.

Alas, the index idea was put on the back burner in October 1987 when the stock market crashed. After a week of bad news, starting on October 12 with receipt of a worsened trade deficit figure for the previous month, the Dow Jones average fell to about 1740; this was a crash of 23%, almost double the less than 13% crash in October 1929. On the following day the market initially recovered by almost 200 point only to fall to crash again to reach a mid-day low of 1620, a drop since the August high of more than 1,000 points. There was a quick recovery, however, and the Dow soon recovered to a trading range between 1900 and 2100, closing out the year about even. Since that time, the Dow fluctuated at higher levels that overtook its August 1987 record. From its lows in 1982 to the highs of 1989 the Dow has increased 3,5 times.

The behavior of the stock market cannot be understood outside the context of the revolutionary tax changes introduced in the tax reform act of 1986. This act built on the triangle of three proposals: the Bradley-Gephardt bill, which posed a 30% maximum personal income tax rate; the Kemp-Kasten bill which called for a 25% flat tax with a $2,000 exemption; and the Reagan proposal prepared at the Treasury late in 1984 for a three-step rate with a 35% maximum. The actual tax act was a compromise that set the maximum income tax rate to 33% then falling to 28%, and raised the tax rate on capital gains to the level levied on incomes. Achieving revenue neutrality was assumed to require a compensating increase in business taxes, including the elimination of the investment tax credit, but the corporate

tax rate was lowered to 34%. The tax reform act caused mixed reactions on Wall Street because of the elimination of many tax shelters and the investment tax credit. When interest was deductible from corporate profits, debt could be substituted for equity at the expense of the government and to the benefit of new corporate owners.

It is necessary to notice the immense importance of the Reagan tax revolution. The top US income tax rates had been more than 60% since June 1932 and had reached as high as 90%. In 1980 the top rate was 70% on federal income tax alone. During the Reagan years, this rate was brought down to 28% (after a hump that rose to 33%). It was indeed a tax revolution in the United States.

The Reagan tax cuts have had an important demonstration effect abroad. Top income tax rates were lowered in nearly all the major countries. Alan Reynolds has prepared a table of the changes in these tax rates for the decade 1979 to 1989 for forty countries. Comparing 1979 to 1989 the reduction was from 83% to 40% in Britain, from 50 to 35% in Indonesia, from 75 to 50% in Japan, from 58 to 45% in Canada (Ontario), from 60 to 53% in France, from 72 to 62% in Italy and so on. We should also add the momentous drop from 100% to 60% in the USSR. In only two cases — Germany and the Netherlands — have income taxes not been lowered; and even in these two countries tax reductions have been prepared for the future. The revolution is becoming a global phenomenon and that is a promising development for economic growth in the rest of the world.

4. - The Present

The United States is now in the enviable state of an economy as close to full employment as it has been in the last 15 years. It has been more successful than Europe in boosting employment. For the first time since 1974, unemployment has been rduced to 5% of the labor force. The number of employed has now reached 119 million. Three reasons for this stand out. The first is the sweeping tax-rate cuts that have increased incentives, raised the marginal productivity of labor and the marginal efficiency of capital; they shifted the Phillips curve

downward and to the left and thus created a more favorable trade off between inflation and unemployment. A widely used measure of the success of inflation-unemployment policy is Okun's discomfort index which sums the rate of inflation and the rate of unemployment. In 1980 the discomfort index was 22, made up of 7% unemployment and 15% inflation. In 1989 the corresponding number on the Okun index is at 10, composed of 5% unemployment and 5% inflation. The discomfort index has been cut by more than half, a tribute to the success of the US policy mix, even if it is poor by comparison with the two decades before the 1971 breakdown of the international monetary system. The second factor has been the Baker dollar. The low dollar has increased the competitiveness of the United States by substantially lowering its real exchange rate relative to that of Japan, Germany and other trading partners. The lower real wage accounted for part of the increase in employment and the exceptional export expansion in 1988. A third factor was the steep drop in the price of oil in the winter of 1985-86. It improved the US terms of trade and increased profits and growth. But it helped oil-dependent economies such as those of Japan and Europe (except for Britain and Norway) even more, and it was that factor that carried the fall of the dollar further than policy could ordinarily have done. The United States is now experiencing some of the employment advantages of an undervalued dollar in return for the sacrifice of its financial terms of trade.

Full employment without inflation has been the standard goal of the United States for the past four decades; the present is no exception. The best full-employment policy is to maintain the low dollar. The undervaluation of the dollar works to the benefit of US employment and production. An undervalued dollar is the best approach to a lower interest rate. The low dollar policy is, however, more inflationary than a high dollar policy. The best way to slow inflation would be to let the dollar appreciate, a policy the United States followed between 1981 and 1984. But it should not permit such an appreciation now. Doing so would bankrupt debtor less developed countries (LDCs) and dissipate the attractive United States' competitive position. It is true that the dollar is somewhat undervalued, that the depreciation from 1985 to 1988 went too far, and that this undervaluation puts on prices some pressure that would not exist if

the dollar were allowed to rise. The best policy, however, is to maintain the spirit of the *Louvre Accord* and to stabilize the dollar.

Much of the stabilizing of exchange rates can be done by foreign countries. When the dollar is strong, foreign sales of dollars reduce bank reserves (assuming no sterilization), raise foreign interest rates and inhibit inflation. But the United States should help in the adjustment if there is a threat of deflationary pressure. Under a system of fixed exchange rates the US would automatically buy foreign exchange to prevent appreciation of the dollar and this would automatically provide the increase in bank reserves necessary for adjustment. Under the managed dollar system the US should exercise the opportunity to build up a stock of foreign exchange reserves for use when the dollar ceases to be strong. It is true that historically the United States has not held much foreign exchange because its reserves were held in the form of gold. But as long as gold is not used in international transactions the United States is without effective reserves to defend the dollar when it becomes weak. It has no way to combat speculative attacks against the dollar except by borrowing foreign exchange, as it did on November 1, 1978; this is obviously not very convincing to the market. At the present time, Japan has $70 billion in foreign exchange reserves, Germany $38 billion, the United Kingdom $31 billion, Italy $25 billion, France $17 billion and Switzerland $16 billion. The United States has only $17 billion at the end of 1988 and has only recently increased its holdings. In the near future it should take direct steps to build up its holdings of foreign exchange reserves, especially deutsche marks and yen. The US Treasury could keep most of these reserves in short term interest-bearing accounts overseas so it would not sacrifice income from the holdings.

In the long run, it would be desirable to create an international reserve unit, analogous to the SDR, to which each country could stabilize its currency and use unsterilized intervention as the basis of monetary policy.

Turning to fiscal policy, the economy has not yet absorbed fully the tax changes put into effect during the past eight years. As the saying goes, "A good tax is an old tax." But two distortions need to be corrected. One is the taxation of capital gains at the same rate as ordinary income. This results in a distortion, for three reasons: first,

capital gains are not offset by capital losses; second, taxes are based on nominal rather than real capital gains; and third, capital gains income is generally riskier than ordinary income. For those reasons I support a move to cut the tax on capital gains to 20%.

A second desirable change in fiscal policy is to lower the corporate income tax rate. The 34% rate of the 1986 tax reform act is too high, especially now that personal income tax rates have been lowered. Distributed profits are already taxed as personal income. Most countries — the United States, Sweden and the Netherlands are exceptions — integrate the personal and corporate taxes by dividend relief either at the corporate or personal level. In the United States the corporate tax rate is added to the income tax rate to make income from capital taxed at a substantially higher rate than income from labor. Reducing the corporation tax to 20% would mitigate, but not eliminate, this defect. Such a reduction would not necessarily result in lower tax revenue. It is possible that more total tax revenue would be raised at a 20% rate than at a 34% rate, considering that the likely results would include an increased tax base, a booming economy, and more taxes on capital gains and income. Also, very little of the tax is now collected on American corporations abroad. Because US corporations can deduct foreign taxes paid from their US tax liabilities, many countries have nothing to lose and everything to gain by charging a tax rate as high as that of the United States, even if it is above the optimum rate for their own economies. A reduction in the US corporate tax would encourage these countries to lower their own rates.

If the capital gains tax and the corporate profit tax could be lowered to 20%, it is possible that the great expansion initiated in 1983 could be prolonged for several more years, avoiding a recession.

5. - Conclusions

In conclusion, the policy today should be to stabilize the dollar near current levels, and that should be the central pillar of our monetary policy. The responsibility for fixing the dollar rests formally with the Treasury, but the Federal Reserve must implement the

policy. The United States should also take the lead in reviving the fruitful discussions of an inflation index to provide a "referee" between surplus and deficit countries. The policy mix should involve stabilization of the dollar through monetary policy, combined with a reduction in the corporate tax rate and the capital gains tax rate to 20%.

It would go beyond the context of the present discussion to consider what an adjustment of expenditures to income, which would be implied by an improvement in our trade balance, would mean to the rest of the world. Trade surpluses in the rest of the world would have to disappear and that would involve important adjustments. At the current state of the business cycle, a reduction in lending to the US with a consequent adjustment of the trade balance would involve more difficult adjustments for the rest of the world than for the United States.

The major challenge to the administration of George Bush, and the foundation of any deficit-reduction package, is to continue the current six-year expansion for another four years. Doing so will require skilful steering and a policy mix along the lines I have suggested.

BIBLIOGRAPHY

[1] BARRO ROBERT: «Are Government Bonds Net Wealth?», *Journal of Political Economy?*, , n. 82, dic. 974, pp. 1095-1117.

[2] HELLER ROBERT: «Money and the International Monetary System», *Homer Jones Memorial Lecture*, University of Missouri, St. Louis, April, 1989. Unpublished manuscript.

[3] MUNDELL ROBERT: «The Public Debt, Corporate Income Taxes and the Rate of Interest», *Journal of Political Economy*, n. 68, December 1960. Reprinted in MUNDELL R.A.: *Monetary Theory: Interest, Influation and Growth in the World Economy* Goodyear, 1971, pp. 5-13.

[4] ——: «The Appropriate Use of Monetary and Fiscal Policy for Intrnal and External Stability», *IMF Staff Papers*, nn. 70-79, March 1962, reprinted in MUNDELL R.A.: *International Economics*, New York, MacMillan, 1968, pp. 233-9.

[5] ——: «The Dollar and the Policy Mix: 1971», *Princeton Studies in International Finance*, June 1971.

[6] WANNISKI JUDE: *The Way the World Works*, Morristown (NJ)), Polyconomics, 1977.

The European Monetary System in the World Economy

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1. - Reform of the International Monetary System

On January 24, 1989, I summarized my iconoclastic views regarding the present international monetary system — or scandal? — before the Economic, Monetary and Industrial Policy Commission of the European Parliament under the title of a famous French song: «Tout va très bien, Madame la Marquise, tout va très bien; mais cependant, il faut que je vous dise... .»

The first part of that title summarizes the reassuring declarations that the repeated and growing crises of today's international *"paper exchange standard,"* anchored primarily on the US dollar, bring forth from responsible officials and their experts. Its second part signifies the conclusions that the facts imposes on them, and on the rest of us as well.

1.1 *Fifteen Years Ago*

Fifteen years ago, after ten years of incessant deliberation at the highest level — by ministers of finance, governors of central banks, and the most highly respected experts — it was concluded universally that a fundamental reform of the present international monetary

system, in order to rectify the defects inherent in any "paper exchange standard," was as urgent as it was indispensable.

The danger of such a standard is that it enables the country whose national currency is accepted by the others as the principal instrument for their international monetary reserves, to finance, by inflationary increases of world reserves held in the currency, excessive and persistent deficits in its balance of payments, regardless of their origin.

Only the currency of a country that is rich and highly capitalized — England formerly, the United States today, Japan and Germany tomorrow — is likely to have such a privilege, *and such a responsibility*, conferred on it. The exercize of this privilege distorts investments of world reserves in a direction as absurd economically as it is humanly. The other countries, including the poorest and those most in need of capital to develop their economies, contribute to the financing of a few of the richest and most highly capitalized countries, which are then free either to re-export such capital inflows as they wish, under conditions of their own choosing, or to use them to increase their own civilian and military expenditures and their own already high levels of consumption.

1.2 *Today*

The international monetary evolution of the last fifteen years has confirmed these conclusions. The current account deficits of the United States totalled more than US $560 billion over the five years 1983-1987 — US $154 billion in the single year 1987. That is more than US $630 per capita in the United States, the equivalent of the total income per capita on which must live — or die of starvation — 3.5 billion inhabitants of the Third World!

The increase in currency reserves of the central banks in the course of 1987 was about US $188 billion, of which US $124 billion (66% was in US dollars) enough to finance 80% of either the US fiscal deficit of US $150 billion or its external deficit of US $154 billion.

I was taught as a university student that the worst and most inflationary method of financing a deficit was to borrow from the

country's central bank. How is it then that the central banks of the rest of the world are willing to finance the deficits of the United States? Our official leaders offer three explanations, of which two are correct; the third, however, is totally indefensible.

The first is that the external deficit of the United States (US $154 billion) and the almost equivalent surpluses of Japan (US $87 billion) and Germany (US $45 billion) have resulted largely from the fact that the United States spends proportionately far more on the military than do the other two countries: 6.7% of GNP, compared with only about 1% for Japan and 3% for Germany.

Japan and Germany recognize that the United States is entitled to claim from them, on the basis of its disproportionate contribution to the common defence, what amounts to the financing of its external deficits. But they cannot ask public opinion or their respective parliaments to vote subsidies for the US budget — especially since they no doubt deem, and quite rightly, that the US military budget is excessive, having more than doubled in eight years under President Ronald Reagan despite the turnaround in Soviet military policy since the coming to power of Mikhail Gorbaciov. They prefer, therefore, to ask their central banks to buy from the market the excess dollars flooding it because of the US deficits, and to perpetuate as long as possible the "paper exchange standard" — unanimously denounced 15 years ago, in June 1974, as the principal cause of the world monetary disorder, after ten years of negotiations at the summit by the Committee of 20 presided over by Jeremy Morse.

The second explanation for the world's willingness to finance the US deficit is that the elimination of the deficit would cause a worldwide depression if it were not compensated for by a more expansionist policy on the part of Germany and Japan, leading them to reduce or reinvest their foreign surpluses.

The third explanation — alas! — is the erroneous one that the rest of the world is unable to refuse a country as powerful as the United States an indefinite increase of loans without any prospect of reimbursement. The decision to lend, it seems to me, is always at the discretion of the lenders rather than the borrowers. I shall, however, say no more on this subject.

1.3 *Tomorrow?*

In the first place, it is as *urgent and indispensable* as ever that we put an end to the "paper exchange standard" and replace it by a truly *international* monetary standard, one based on reserves deposited with the International Monetary Fund (IMF) rather than on a handful of *national* currencies — the dollar especially — called "parallel currencies." But the United States is not yet ready to negotiate such a reform, which is impossible without its agreement.

Second, the countries of the European Community (EC) should immediately accelerate their progress toward a European monetary union in order to diminish their excessive dependence on a violently fluctuating paper dollar — a dollar that is sometimes highly overvalued and sometimes markedly undervalued, to the great detriment of the United States itself, as well as the rest of the world. The formation of a monetary union would also enable the EC countries to offer the United States more effective assistance in resolving the international problem of the dollar.

Finally, there is the matter of a more equitable sharing of military costs between the United States and its allies. I shall limit myself to three observations: 1) the main one is that it would certainly be a welcome development if the United States and the Soviet Union were mutually to reduce their nuclear arsenals, of which 1% would suffice — according to the last report prepared at the Massachusetts Institute of Technology for President Reagan — to exterminate most of either country's population and reduce the survivors to living standards unknown since the Middle Ages; 2) the recent radical change in military policy on the part of the Soviet Union should make it possible for the (NATO) countries to support the costs of an adequate conventional defence, which they have heretofore considered unsustainable; 3) let us note in this connection that most commentaries grossly exaggerate the superiority of the conventional forces of the Warsaw Pact, not only for the reasons frequently advanced by Helmut Schmidt, but also because they fail to include with the armaments of NATO those of the numerous countries that benefit from US military aid, of which some at least would side with NATO in the event of war.

2. - The European Monetary System and the ECU

I hope that the brief introductory remarks that follow will lead some readers to my more detailed article, "The Intermixture of Politics and Economics in the World Monetary Scandal: Diagnosis and Prescription," which appeared in the January 1989 issue of *The American Economist* and, in French, in *Repères* (January 1989, n. 16), the economic and financial bulletin of the *Banque Internationale à Luxembourg*. I feel particularly pleased and honored to have this translation preceded by an article by the governor of the Bundesbank, Karl Otto Pohl, whose views on the future of European monetary integration are practically identical to mine, though obviously far more influential. Let me stress that they also differ radically from the views that were responsible for the obdurate opposition of the Bundesbank, under the leadership of Otmar Emminger, to the European Monetary System (EMS) and the European Corrency Unit (ECU).

Governor Pohl and I are in fundamental agreement on the ultimate objective of *full monetary union*, under which the deutsche mark and the other national currencies of the European Community would disappeared entirely, to be replaced by a single European currency, the ECU. Needless to say, I also agree with him that more immediately feasible and negotiable reforms of the EMS should be couched in a way that will facilitate progress toward that ultimate goal.

Governor Poul has repeated these two points in innumerable speeches and articles, with however one caveat or qualification — that a monetary union treaty and the creation of the European central bank indispensable to its management must be predicated on the agreement of the participating countries on two essential points: 1) the joint pursuit of *price* stability as well as exchange rate stability and; 2) the independence of the European central bank from political pressure from either the European Community or the national governments of its member countries.

In the absence of such an agreement, full monetary union — or even the preservation of irrevocably stable exchange rates among member currencies — would force the surplus countries to finance

the deficit countries, at the cost of importing inflation from them. This is, of course unacceptable to Germany, and it is avoided under the EMS, as it now operates, through exchange rate "realignments" that offset the inflation rate differentials that some countries are still unable to avoid.

No realignment has been necessary however, since January 1987. Indeed, even that realignment could have been avoided had the European Community adopted a more appropriate joint policy vis-à-vis the dollar. In the absence of such a policy, a realignment of the exchange rate was forced upon France by an excessive flight of speculative capital to the United States, even through French progress toward both price stability internally and balance of payments equilibrium externally made realignment otherwise totally inappropriate.

Note also that Germany's continental partners, as well as Germany itself, have now proclaimed themselves determined not to bow to any British veto regarding future progress toward monetary union. Instead, all of the countries ready for union — Germany, France, Belgium, Luxembourg, and Italy — will go ahead with it, leaving the door open to Britain and other countries to join them later. This strategy has just been spelled out politically as well as economically in the judicious *Report* of the Delors committee and in the New Treaty proposed in detail by the European Parliament under the leadership of Otmar Franz.

A crucial aspect of these proposals is, of course, their impact upon the international crisis of the dollar and its exchange rate vis-à-vis the ECU and the deutsche mark.

My proposals aim specifically at enabling the European Community to help resolve this awesome dollar problem. First, they would remove the major threat to the dollar exchange rates represented by the enormous accumulation of short-term (US) indebtedness held more and more reluctantly by foreign central banks. All of this indebtedness — and even possibly some of that held by other investors — should be converted into what is a most appropriate instrument for international lending, an instrument that was widely used for that purpose in the past: *consols* («rentes perpétuelles» in French), which would not have an imperative maturity date but would provide adequate interest earnings and exchange rate guarantees.

The attractiveness of consols is double: 1) they conform legally to an inescapable fact of life: no country can repay its global debts as long as it remains in global deficit, and no country can reduce its global claims as long as it remains in global surplus; 2) many investors — and particularly banks — have no wish to liquidate their investments at maturity and therefore must reinvest the repayments they receive. As for those who want cash, consol obligations, like other obligations, are negotiable at any time in what should be a wide and relatively stable security market.

Second, my proposals recognize that the United States cannot be expected to restore either its budgetary or its balance of payments equilibrium overnight. They suggest therefore that the European Monetary Cooperation Fund (FECOM), the International Monetary Fund (IFM), and other official agencies continue to supply such financing for a period of two or three years, but under conditions that will ensure the full cooperation of the US authorities in restoring the international balance of payments equilibrium — or rather surplus — that the richest and most capitalized country in the world should possess.

The proponents of European integration are encouraged by the fact that the two founding fathers of the EMS and ECU, Valéry Giscard d'Estaing and Helmut Schmidt, are major advocates today of concrete and detailed proposals for full monetary union under the management of a European Federal Reserve Bank.

Those who equate wisdom with skepticism, however, will dismiss as utopian the advocacy by political and financial leaders, when out of office, of such ambitious reforms, which they dismissed as unfeasible when they were in office.

The reader may be more interested, therefore, in the treaty concluded in January 1988 between the governments of France and Germany and later ratified by their parliaments, a treaty that creates a common *defence and security council* and a common *economic and financial council.* The latter council is made up of the presidents of the Bank of France and the Bundesbank and the French and German ministers of finance and ministers of economics.

Even more important, to my mind, is the growing pressure from private economic sectors for the development of the ECU, as a

transnational currency that would eliminate the unnecessary costs and risks associated with exchange transactions. Such a currency is indispensable in any case to the achievement of full economic union by 1993.

I hope to live long enough to witness the completion of this life-long dream of many Europeans!

The State of the World Economy: Global Imbalance, Exchange Rates and the World Debt

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The subtitle indicates three major problems confronting the world economy that I address in this paper. The first is global imbalances, the persistent and large US budget and trade deficits (more precisely, current account deficits) and the equally persistent German and Japanese trade surpluses.

Second (and raised by speaking of balance-of-payments disequilibrium) is the question of exchange rates. Is that problem, it may be asked, not taken care of by floating exchange rates? Unfortunately, the matter is not quite so simple with the present system of managed — or mismanaged — floating rates. The third problem is that of the world debt, the problem of the over-indebted less developed countries (LDCs), which has again come to a boil.

For the solution of all these problems, the economic health and policies of the large industrial countries are, of course, of paramount importance. The US economy is now in its seventh year of a vigorous and until recently noninflationary expansion — the longest peacetime cyclical expansion on record. Naturally, the longer the expansion lasts, the more precarious the situation becomes. After the stock exchange crashes in November 1987, many economists, including myself, expected a recession. The prompt action of the US Federal Reserve Board in assuring the market that it was ready to act in an emergency can probably be credited with preventing the stock exchange crashes from causing a recession. But as the stance of tight money has

continued in 1988, the expansion has showed, interest rates have risen sharply, ad there are ominous signs of accelerating inflation.

Before trying to put recent developments into proper perspective, I mention a minor byproduct of recent developments. That economists do not speak with one voice in such a fluid situation should be no surprise. Still, the reputation of economics and of economists has suffered badly because there has not been much agreement on important questions. In an important paper titled *Politics and the Professors Revisited*, one respected member of the profession, Henry Aaron [1] asked rhetorically whether economists can be taken seriously when they give different advice on important problems. As one might expect, this remark was stridently echoed in the popular media.

1. - Some Historical Perspectives

To put recent developments into proper perspective, first recall that the present situation has some striking similarities to the one in the late 1970s and early 1980s, although the general background was different. From July 1981 to November 1982, the United States and the industrial countries as a group experienced the severest recession since the war. This time around a recession is widely expected but has not yet started. What the two episodes have in common is that 1) economists have been taken to task for giving conflicting advice on important policy questions; and 2) more important, both the recent slowdown and the recession of 1981-1982 have been blamed on the US Federal Reserve Board. Everyone agrees that inflation has to be stopped. But the critics — monetarists and supply-siders — say the poison should have been withdrawn gradually.

Winding down inflation gradually would surely be the ideal method. But doing so is a delicate, time-consuming operation that may not be feasible once inflationary expectations have taken hold and the problem has become a hotly debated political issue (1).

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(1) See for example, HABERLER [5].

(*) *Advise:* the numbers in square brackets refer to the Bibliography in the appendix.

A second way to get perspective on today's economic problems is to look at the whole postwar period (1945-1989). It is no exaggeration to say that has been nearly half a century of unprecedented growth and prosperity for the whole western world, developed and less developed countries alike. True, the National Bureau of Economic Research registers eight recessions during the period, but none of them was a depression — that is, a contraction of output and employment coming near the sharp decline of the Great Depression of the 1930s earlier ones (2). I can do no better than to quote here, as I have elsewhere, the world's foremost expert on economic growth, Simon Kuznets ([12], p. 14). In his magisterial lecture, *Two Centuries of Economic Growth: Reflection on US Experience,* he summed up the results of the enormous amount of research that he and others, many under his guidance, have done over the years: «Even in this recent twenty-five year period of greater strain and danger, the growth in peace-time product per capita in the United States was still at a high rate; and in the rest of the world, developed and less developed (but excepting the few countries and periods marked by internal conflicts and political breakdown), material returns have grown, per capita, at a rate higher than ever observed in the past» (3).

In a paper on growth in the less developed countries (LDCs) Kuznets ([11], p. 41 said: «For the LDCs as a group, the United Nations has estimated annual growth rates of total and per capita GDP (gross domestic product at constant factor prices) from 1950 to 1972. The growth rates of per capita product . . . for the twenty-two years was 2.61% per year . . . Such growth rates are quite high in the long-term historical perspective of both the LDCs and the current LDCs».

These high growth rates are largely a recent phenomenon, the

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(2) The difference between recession and depression is not merely a quantitative one. It has been established that all depressions in modern times have been caused or sharply aggrevated by monetary mismanagement. For example, in the 1930s the US Federal Reserve, through acts of omission and commission, allowed the money supply to contract by 30%. One need not be a monetarist to understand that such a deflation will have catastrophic consequences.

(3) Kuznets's findings about growth in the less-developed countries are reported at great length in KUZNETS [10], [12]. His findings have been confirmed by KRAVIS and LIPSEY, [9] using data for the 1950-1980 period that become available after Kuznets wrote.

result of the post-World War II period of comparative liberalism and liberalization. Kuznets is, of course, fully aware of the dangers of using broad aggregate measures of growth for the LDCs as a group, given the great diversity among the countries in the Third World. He discusses and carefully evaluates possible biases in the procedures. But after everything has been said and done, he stands by the basic soundness of his findings and is puzzled that, despite the "impressively high growth rates in the per-capita product of LDCs over almost a quarter of a century," the general sentiment in those countries is one of dissatisfaction and gloom that "seems to ignore the growth achievements." He conjectures (giving ample reasons for doing so) that «a rise in expectations has produced a negative reaction to economic attainments which otherwise might have elicited litanies of praise for economic 'miracles'» (Kuznets [11], p. 41).

Global statistics that have become available since the updating of Kuznets's findings by Kravis and Lipsey [9] do not show any recent changes for the worse. Yet the general mood in the Third World seems to have become even more pessimistic and gloomy in this decade. Some reasons were the two oil shocks, the global imbalance, and the munting debt. I suppose that some of the pessimism — and not only that in official statements — may be a bargaining ploy to get more aid and other concessions from the rich industrial countries.

2. - Global Imbalances

At the center of the problem in this decade have been the persistent US budget and trade deficits, which call into question the international value of the dollar, and the equally persistent Japanese and German trade surpluses. This situation is in sharp contrast to the first 20 years after the war when the dollar ruled supreme. The dollar is better than gold, it was said then.

That was the period when the theory of the permanent dollar shortage flourished, especially in Britain. In his famous 1920s debate with Bertil Ohlin about the German reparations for World War I, Keynes argues that since the elasticity of foreign demand for German

export goods was low, it would be impossible for Germany to transfer large sums as reparations (4).

Some 20 years later, during World War II, *The Economist* (December 4, 1943) said: «It may be, in fact, that the [dollar] problem should not be regarded as the fruit of aberrations of policy . . . but that it should be looked upon as the result of a set of economic circumstances never contemplated by the textbooks — namely, the existence of a country which, all policy apart, needs so little from the rest of the world, while the rest of the world requires so much from it, that an equilibrium of accounts can be brought about by no means available to a free, or even a tolerably free market».

It is somewhat surprising that J.R. Hicks [5], [6] and D.H. Robertson [14] found some merit in the argument that international demand for an industrial country's exports could be inelastic. One would have expected that Alfred Marshall, who considered the theory carefully and rejected it, had settled the issue in the 1920s. In *Money, Credit and Commerce,* Marshall ([13], p. 171) summarized his view: «it is practically certain that in the Ricardian example and under modern industrial conditions the total demand of each of the two countries for each other's goods is relatively elastic. And where a large and rich commercial country confronts the rest of the world, this assumption becomes absolutely certain».

And again Marshall [13], p. 354: «Nothing approaching to this [unstable equilibrium resulting from inelastic demand] has ever occurred in the real world. It is not inconceivable, but it is absolutely impossible».

In the late 1960s and 1970s, the dollar lost its position of unquestioned predominance. The main reasons were bouts of inflation in the United States, and, more important, the unexpected, rapid economic recovery of the defeated countries, Japan and West Germany. Another factor was the rapid rise of the newly industrialized countries (NICs) of Asia: Taiwan, South Korea, Hong Kong, and Singapore.

(4) Ohlin pointed out that Keynes's analysis overlooked income effects. The transfer problem was then discussed in a huge literature. It is, I believe, fair to say that Ohlin was proven right and Keynes wrong. But the political consequences of the reparations were disastrous. They poisoned the political atmosphere and helped Hitler come to power.

3. - The US Trade and Budget Deficits

Saying that the US budget and trade deficits are at the center of today's global imbalances suggests that there is a link between budget and trade deficits. This is, indeed, the view of the great majority of economists, although their description of the nature and the tightness of the linkage varies.

3.1 *Rational Expectations and Budget Deficits*

Before offering my own thoughts on the matter, I must first say a few words about the view of some members of the modern school of rational expectations. These economists argue that budget deficits do not raise interest rates and do not crowd out private investment — a position that is often called the Ricardian equivalence theorem, although it has been shown that David Ricardo flirted with the idea, but later rejected it as "unrealistic". The theory asserts that when the government sells bonds to finance its deficit, the price of these instruments will not decline because the additional supply of them will be matched by the additional demand from domestic savings. The reason is that rational people know that the mounting government debt must be serviced and that, therefore, taxes will be raised. To provide for the expected future tax labilities (their own and their children's), rational people will save.

Discussing why additional saving and demand for bonds should or should not be precisely or approximately equal to the additional supply of bonds by the government would lead me too far in this brief paper. I will confine myself to saying simply that I think Ricardo was right when he rejected the whole idea as unrealistic. People just don't think that way. Nobody knows what his future tax liabilities will be, let alone those of his children and grandchildren.

All this does not mean that expectations are unimportant. To the contrary, they are very important. But it's one thing to say that larger government deficits will trigger inflationary expectations, which may deprive expansionary policies of their stimulating effect. It is an entirely different thing to say that expected future tax liabilities will make innocuous heavy government borrowing and spending.

Unfortunately, the theory is not a purely academic one. It has been picked up by the media and may well provide a reason for irresponsible politicians to do nothing when action is badly needed. I give one example. On February 16, 1989, the influential *Wall Street Journal* carried an article by its editor, Robert Bartley saying that «budget deficits are pretty much irrelevant». To support his view, Mr. Bartley referred to the Ricardian equivalence theorem and to the writings of Robert Barro.

3.2 *A Suggestion*

I believe that the US government should phase out its large structural budget deficits (structural deficits as distinguished from the cyclical deficits that would emerge if and when the economy slides into a recession). I do not think that there is an acute danger that investors at home or abroad will suddenly loose confidence in the dollar, as some experts have predicted. But worry about the mounting foreign debt is widespread, and a credible policy of phasing out the deficit over a reasonable period of time — say three to five years — would do wonders. If markets became convinced that US government borrowing would decline immediately and stop in a few years, interest rates would fall sharply. Given the large size of the public debt, such a change would make a substantial contribution to balancing the budget.

In my opinion, the easiest, cheapest and most efficient method of balancing the budget would be a stiff gasoline tax. I know that politically it would be very difficult to impose. Yet the advantages would be enormous. It would solve the budget problem, and also have a beneficial environmental impact by curbing the production and use of oversized, gas-guzzling automobiles that pollute the air and choke traffic. The intolerable smog and traffic jams in the Los Angeles area indicate a trend that could be stopped by such a tax.

3.3 *The US Trade Deficits and the Exchange Rate Regime*

After the recession of July 1981 to November 1982, the US economy took off on a vigorous and noninflationary expansion. It also

developed large budget and trade deficits. The deficits have declined but are still large, and over the whole period they have turned the United States from the world's largest creditor country into the world's largest debtor country.

This situation is widely but not universally, regarded as a very alarming development. What cannot be doubted is that in the short run, budget deficits, which were the result of much needed tax cuts, had the highly beneficial effect of lifting the US economy out of the recession. Confidence in the country's economy and in the dollar, at home and abroad, was restored, capital poured into the United States from European and other countries, the dollar rose in the foreign exchange markets, and a trade deficit emerged. in the short run, this, too was beneficial; the higher dollar and increased imports contributed to price stability in the United States, and many other countries found that increased exports to the United States helped them to emerge from the recession.

How about the long run? How long can the United States borrow heavily abroad to finance its budget deficits? Before tackling that problem, I will discuss very briefly the implications of the events of the early 1980s for the exchange rate regime.

4. - The Exchange Rate System in the 1980s

It should be clear that if any system of fixed exchange rates had been in effect during in the early 1980s, when capital from Europe was pouring into the United States, the countries that were exporting capital would have suffered large losses of reserves and have been subjected to heavy deflationary pressure. Any system of fixed exchange rates, with or without a target zone, would have collapsed. True, under exchange rates can be changed something like the Bretton Woods system. But any system of stable but adjustable exchange rates is very vulnerable to destabilizing speculation. When a currency weakens, the speculators (investors) know that its exchange rates will only hold even or go down; it cannot go up. Furthermore, they have learned from experience that any eventual devaluation is bound to be large (because authorities want to make sure that they

will not soon have to go through the painful operation again). Thus, the speculators risk little. If they have guessed correctly and the currency is devalued, they will make a large profit. If they have guessed wrong and the currency is not devalued, they will lose only transaction costs.

The situation is different with a regime of floating exchange rates. A currency under pressure goes down immediately. Speculators can never be sure whether the market has already overshot so that the currency will go down again. In other words, under a system of fixed exchange rates, investors making decision are speculating against the central banks, whose hands are tied. Investors working under a system of floating exchange rates speculate against each other, which is obviously much more risky.

The pressure of speculation is the reason why the Bretton Woods Agreement broke down. In the late 1960s and early 1970s, the dollar was weak because the United States had several bouts of inflation. Confidence in the dollar waned, and foreign central banks had to buy billions of dollars to hold the line. The end came with dramatic suddenness. On January 23, 1973, the Swiss National Bank stopped buying dollars and let the franc float up. A flood of dollars swept into Germany. During a five-day period, from February 5, 1973 to February 9, 1973, the Bundesbank bought $5 billion. Then it gave up. That was the end of the Bretton Woods system of stable but adjustable exchange rates. Three years later, the second amendment of the Articles of Agreement of the International Monetary Fund (IMF) legalized floating exchange rates.

Nevertheless, floatig exchange rates have never been fully accepted, and in the last few years the present system of loosely managed — or mismanaged — floating rates has come under sharp criticism. French governments, both socialist and communist have urged a return to something like the Bretton Woods system. On February 19, 1988 a blast come from an unexpected source, Pope John Paul II [8]. In his encyclical *Sollicitudo Rei Socialis*, His Holiness said: «The world monetary financial system is marked by an excessive fluctuation of exchange rates and interest rates, to the detriment of the balance of payments and the debt situation of the poor countries».

Naturally, the Pope did not make concrete proposals for change,

in fact, the *Encyclical* says: «The Church does not have technical solution to offer». Still, the Pope's statement has ben widely interpreted as a rejection of the present system of floating exchange rates. For example, it delighted the gold bugs. The *Wall Street Journal* (February 23, 1988) honored two of "the world's notable economic thinkers", it awarded a silver medal to the Pope. (The gold medal went to Edouard Balladur, the French minister of finance.)

All this criticism is unconvincing. There is no reason to believe that a Bretton Woods type system would work better in the 1980s and 1990s that it did in the 1960s and 1970s. On the contrary, there are good reasons to believe that it would work less well. Critics of floating rates point to what they call their excessive volatility. The answer is that a large part — probably most — of that volatility has resulted from the fact that markets are mislead and kept guessing about what governments are up to. Frequent changes in monetary and central bank policy, semi-secret interventions in the foreign exchange market (which are often accompanied by leaks — intentional or unitentional) are hardly conducive to stabilizing exchange rates or smoothing adjustments. The same is true of the "open mouth" policies followed by the Group of Seven (G7) and some other groups — frequent official statements that exchange rates are just about right that are soon contradicted by the facts.

Although I believe that the floating exchange rate system should continue, I do not want to exaggerate the case for it. Such a system is merely a second best. An agreement in which two countries (or any group of countries) agreed to fix the exchange rates of their currencies would be the best solution, *provided* that two conditions were fulfilled: *first*, currencies would have to be fully convertible in free markets; in other words, there could be no exchange control, either open or disguised (for example, as import restrictions on balance of payments grounds). Fixed rates propped up by a battery of controls are surely the worst possible system. *Second*, the fixed rate would not impose heavy unemployment or inflation on any participating country.

Unfortunately, those conditions are met only rarely in the present-day world. They require at minimum very tight coordination of monetary policy, which is very hard to achieve. Real exceptions can

be found among the many countries that peg their currency to the dollar, the yen, or the Deutschemark. A good example is Austria, with its schilling pegged tightly to the Deutschemark. That means that Austrian monetary policy is made not in Vienna but in Frankfurt by the Bundesbank and that the Austrian rate of inflation cannot diverge significantly from the German (5).

The European Monetary System (EMS) offers no example here because some of its members, especially France and Belgium, still have much exchange control, and Britain is not even a member of the EMS. True, countries of the European Community have committed themselves to phasing out all restrictions on capital flow by mid-1990 and to creating a single market by 1992. But it remains to be seen whether these plans will, in fact, be carried out. The British government maintains a healthy skepticism about them and about the even more ambitious plans for the creation of a real monetary and economic union laid out by the Delors Committee (the Committee of 17) for discussion at the European Summit in Madrid in June 1989.

Now consider the four uncommitted countries: the United States, Japan, Britain and Germany (6).

The four currencies are not formally linked, but, as already mentioned, the G7 has stated on several occasions that the then-existing rates were just about right and members' central banks have backed up such statements with large interventions in the foreign exchange market. I suggest that this approach is seriously flawed. It does not promote stability of exchange rates and large interventions in the foreign exchange market divert monetary policy from its proper function of maintaining price stability at home (7).

The basic trouble with the activist approach is that neither economists nor ministers of finance and central bankers, know what

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(5) Austria is not a perfect example here because it still has some exchange controls. But they are mild and are slowly being phased out.

(6) Although the position of Germany is somewhat ambivalent, both politically and economically, since it is a member of the EMS.

(7) MARTIN FELDSTEIN [3] has expressed a similar view: «Elevating exchange rate stability to a separate goal of economic policy could have serious adverse consequences. Trying to achieve that goal would mean diverting monetary and fiscal policies from their customary roles and thereby risking excessive inflation and unemployment and inadequate capital formation».

the equilibrium exchange rate is. Time and again official statements that the rate is right have been disproved by fact, and expert opinion is sharply divided on how much the dollar has to decline to eliminate the US trade deficit. (Policymakers at last are becoming aware of their ignorance. Thus Japan's former Prime Minister Noburu Takeshita, when asked whether the dollar/yen rate was wright, answered, "God only knows".

The right policy for the four countries is to concentrate their efforts on the basic domestic objective — that is steady, noninflationary growth — and leave exchange rates to be determined in free, competitive markets. Some changes in those rates will be necessary from time to time even if all four successfully maintain steady, noninflationary growth, and large changes will be needed if there are bouts of inflation or recession.

True, markets sometimes make mistakes. But if they overshoot, some market participants will notice that something is wrong and the market will correct itself. In contrast, governments, by the nature of the political process, are slow to recognize and admit that a mistake has been made and even slower in correcting it. (The US budget deficit is a good example.)

5. - The World Debt Problem

The world debt problem burst on the world in the summer of 1982 when Mexico announced that it was not able to service its foreign debt. Many LDCs followed suit. The total amount of the debt involved is staggering, and the financial exposure of the United States and other western banks is very large (8).

Consider some recent figures on inflation that illuminate the economic landscape of Latin America in a flash. The IMF ([7], p. 140) reports: «Average inflation in developing countries rose in 1988 for the

(8) Although I concentrate here on Latin America, I must mention that even some communist countries that managed to borrow heavily in the West — Hungary, Poland, and Yugoslavia, for example — have joined ranks of doubtful debtors. The exception here is Romania. An oppressive dictator has insisted on repaying the country's foreign debt at considerable hardship to the people.

second straight year to 58.3%, compared with 35.5% in 1987. The rise was led by a sharp acceleration inflation in Western Hemisphere countries — to an average rate of 216%, compared with 117.4% the year before. Inflation rose most rapidly in Nicaragua (to 10,205%, compared with 911.9% in 1987), Brazil (to 682.3%, compared with 29.7%), Argentina to (343.0%, compared with 131.3%) and Equador (to 58.2%, compared with 29.5%).

In sharp contrast, in Chile inflation declined from 19.9% in 1987 to 14.7% in 1988».

More on this revealing contrast presently, but first a few words on the sad story of Argentina.

Argentina, a country richly endowed with a good climate and natural and human resources, really has no business being an LDC. Fifty years ago Colin Clark in his pioneering work *Conditions of Economic Progress,* compared Argentina with Australia and predicted that per capita incomes in the two economies would rise at more or less the same rate. The prediction was unreasonable. What happened? The answer is political instability and economic mismanagement by sucessive regimes, beginning with the 1940s dictatorship of Juan Peron who pushed industrialization and coddled labor unions at the expense of highly efficient agriculture.

During the last few years skyrocketing inflation in Argentina and elsewhere has called for radical reform. What was the reaction of the United States? Driven by the fear that a series of defaults by over-indebted countries would threaten its own financial stability, the United States urged its banks and the international institutions such as the World Bank and the IMF to lend more money to the debtor countries. The additional load did carry some economic recommendations but provided insufficient incentives for the recepients to undertake reforms of their domestic policies. The result was that many LDCs increased their total indebtedness but used all or part of the new funds to pay the interest on the old debts. In some cases, notably that of Argentina, part of the new money came right back in the form of capital flight.

What are the economic reforms that are needed? Inflation must be stopped. Doing so will require that the growth rate of the money stock be approximately equal to the potential growth of output.

Monetary restraint is not enough. What is needed can best be described as a general liberalization of the economy, including the elimination of exchange controls and excessive import restrictions and the privatization of many public enterprises, which now often grossly inefficient and overstaffed. All this is now almost generally accepted in the West, not only by conservative nations but also by socialist governments, such as those in New Zealand and Sweden. Even in the communist countries, some liberalization is taking place.

Such an approach has been taken in Chile, where public enterprises have been sold to private investors, import tariffs have been lowered, and many regulations have been phased out. Inflation has been sharply reduced. The economy has responded with more investment, faster growth and increased productivity. The foreign debt has been reduced, lowering interest payments. Thus, for Chile the debt problem is well under control.

The prescription for reform could be brief because the economics is straightforward and widely accepted. What is difficult is to muster the political will to do what is necessary.

APPENDIX

Early in 1989 the US dollar took off on a totally unexpected surge. From January to may the dollar rose about 14% against the yen and 12.5 percent against the Deutschmark, despite large interventions in which central banks, including the US Federal Reserve, sold dollars for other currencies in the foreign exchange market. The *Financial Times* headlined "The Dazzling Dollar" (May 10), and *The Economist* "The Mysterious Dollar" (May 13).

Ministers of finance and governors of central banks, as well as private experts, were taken completely by syrprise. A leading expert called the behaviour of the dollar "irrational"; another said that it was not consistent with the "underlying fundamenals" and concluded that it was just a "speculative bubble".

Others have offered various explanations of the dollar's strength, such as high interest rates in the United States, compared with those in Germany and Japan, and internal political difficulties of the German and Japanese governments that have reduced the attractiveness of the Deutschemark and the yen. A more fanciful theory says that the US economy is on the verge of sliding into a recession, and investors know that recessions are the classical method of bringing own inflation and reducing interest rates. On the basis of some purchasing power parity (PPP) calculations, some economists have concluded that the dollar was undervalued before its recent sharp rise (9).

There is some truth in some of those explanations, but I will not try to evaluate them, except to say that the turmoil in China has sharply increased the attractiveness of the dollar, especially in the Pacific area. Otherwise, I will confine myself to two points: 1) the role of the US budget deficit in the emergence of the strong dollar; and 2) international policy reactions to the strong dollar, which, in my

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(9) In my opinion, PPP has never been a reliable measure of equilibrium exchange rates, and its reliability has diminished with the rise in international trade of high-tech products and services, whose prices are difficult to measure. How would one figure out the PPP between countries that export primary products and advanced industrial countries that produce and export, say, complicated instruments, machinery, aircraft, and the like?

opinion, support the view that markets, if left alone, set exchange rates better than governments do.

1. - The Strong Dollar and the US Budget

By keeping interest rates higher in the United States than in Germany and Japan, US budget deficits have been a vital factor in bringing about the strong dollar. This causality is paradoxical because a loose fiscal policy usually makes a currency weak, not strong. The fact is, however, that the United States is in a unique position. Despite its large trade and budget deficits, investors around the world have confidence in its basic economic and political stability.

That attitude could change, however. At any rate, the United States should not go on and on adding to its already large foreign debt. That the richest country in the world should import capital from the rest of the world to finance its budget deficits is an anomaly that causes resentment in the LDCs. I conclude that phasing out the US budget deficit is important from both the national and the international standpoint.

The adoption of a credible program to phase out the structural budget deficit would lead to a sharp reduction of interest rates. Lower interest rates are a blessing becuase they stimulate investment. Low interest rates would also lead to a decline of the dollar in the foreign exchange market because some speculators, both domestic and foreign, who have been attracted by high interest rates would switch to investments in other currencies.

The decline of the dollar from its high present level would also be desirable because it would bring down the trade deficit and so reduce protectionist pressures. But a declining dollar and the reduction of the trade deficit would have an inflationary potential, intensified by the fact the US economy is now operating at full employment levels. A falling dollar would clearly have a direct inflationary effect on the prices of imported and exported goods. Reducing the trade deficit implies an expansion of the export industries and of the import-competing industries — that is, the traded-goods industries; at full employment such an expansion would obviously be an inflationary factor.)

What is the solution? The trade and the budget deficit should be phased out at the same time. The reduction of a trade deficit is inflationary; the reduction of a budget deficit — either by cutting government expenditures or by raising taxes — is deflationary. Ideally, the two reductions would offset each other.

To put same point in more formal terms: the additional demand for productive resources of the traded-goods industries should be matched by the additional supplies of productive resources that will become available when the budget deficit is reduced. It can all be brought by market forces, which will respond to a credible budget — balancing program with lower interest rates and a lower dollar provided that skillful monetary policy keeps the overall price level stable.

2. - The International Policy Reaction to the Strong Dollar

When the US dollar soared in early 1989, the international policy reactions were the usual ones: central banks made semi-secret interventions to keep it down, and leaks and conflicting policy statements from high officials kept the markets guessing about what the authorities were up to. On May 18, 1989 nine central banks, including the Federal Reserve and the Japanese and Swiss national banks, intervened in the market, selling $1.5 to $3 billion, according to the estimates of private traders. The next day the President of the Bundesbank revealed that Germany had not participated in this operation; "Germany," he said, "can live with the high dollar."

Fred Bergsten and some other experts have recommended that the G7 push the dollar down in order to reduce the US trade deficit. *The Washington Post* (May 19, 1989) reported that when Federal Reserve Governor Wayne Angell was asked what he thought of that proposal, he answered, "I can't imagine anything that would be more fraught with potential disaster for the world's financial system." This was before the dollar rose to 2DM.

The trouble with the present system is that the usual, routinely "sterilized" interventions of central banks in the foreign exchange markets have very little effect on exchange rates because they leave

the money supply unchanged. Suppose the Federal Reserve intervenes to check the rise of the dollar by buying, say, $2 billion German and Japanese securities in the foreign exchange market. But at the same time it sells $2 billion US securities in the domestic money market. The stock of money has not changed. The only change is the substitution of some foreign securities for domestic securities in its portfolio. If the German Bundesbank intervenes to check the rise of the dollar, the story is the same: it sells dollars from its stock portfolio in the foreign exchange market and at the same time buys German securities in the domestic money market. The only change is a shift in its portfolio, a substitution of German for American securities. Yet the newspapers then write of the "unstoppable" rise of the dollar. Actually, it would be easy for the Federal Reserve to stop the rise of the dollar. All it has to do is to stop sterilizing — in other words, let the quantity of money go up. This would however, risk inflation.

My conclusion is again that the best method of dealing with global imbalances would be for the United States, Japan, Germany, and possibly other large industrial countries to conduct their monetary and fiscal policies so as to achieve basic domestic policy objectives — steady noninflationary growth and high employment. The exchange rates should be allowed to float and then determined in free competitive markets. Other countries would have the choice of pegging their currencies to the dollar, the yen, or the Deutschemark, as many do already, or letting them float independently.

Some people will object that the markets cannot be trusted, that the strong dollar itself constitutes a gigantic market failure. This is not true. We have seen that the large US budget deficits, by keeping interest rates too high, have been a major cause of the strong dollar.

One last question. Suppose that the US budget deficit is on the way out and interest rates have sharply declined, but capital still flows in because of unsettled conditions in part of the world. What should be the American reaction? My answer is that the situation would be fine from the US standpoint. If foreign capital were no longer used to finance the budget deficit, it would go into productive private investment. Then the United States, the capital stock and thus its productivity would increase, which would take care of servicing the growing foreign debt.

BIBLIOGRAPHY

[1] AARON H.J.: «Politics and the Professors Revisited» Richard T. Ely Lecture, *The American Economic Review* vol. 79, May 1989, pp. 1-15.

[2] BARTLEY R.: «Budget Deficits: A Third View», *The Wall Street Journal*, February 16, 1989.

[3] FELDSTEIN M.: «NBER», *Working Paper*, n. 2838, February 1989.

[4] HABERLER G.: «The Economic Malaise of the 1980s: A Positive Program for a Benevolent and Enlightened Dictator» in FELLNER W. (ed.): *Contemporary Economic Problems*, Washington (DC), American Enterprise Institute, 1982.

[5] HICHS J.R.: «Inaugural Lecture» *Oxford Economic Papers*, 1953.

[6] ——: «The Long-Run Dollar Problem», *Essays in World Economics*, Oxford, 1959.

[7] IMF: «Inflation Up in 1988 in Developing Countries», *IMF Survey*, n. 18, May 1989, p. 140.

[8] JOHN PAUL II, POPE: «The Social Concerns of the Church», *Encyclical Sollecitudo Rei Sociali*, February 19, 1988.

[9] KRAVIS I. - LIPSEY R.: «The Diffusion of Economic Growth in the World Economy, 1950-1980», in KENDRICH J. (ed): *International Comparisons of Productivity and Causes of the Slowdown*, Cambridge (Mass.), Ballinger, 1984, pp. 109-52.

[10] KUZNETS S.: *Economic Growth of Nations: Total Outpt and Production Structure*, Cambridge (Mass.), Harvard University Press, 1971.

[11] ——: «Aspects of Post-World War II Growth in Less Developed Countries», in TANG A.M. - WESTFIELD E.M. - WORLEY J.E. (ed.): *Evolution, Welfare, and Time in Economics: Essays in Honour of Nicholas Georgescu-Roegen*, Lexington, (Mass.), Lexington Books, 1976.

[12] ——: «Two Centuries of Economic Growth: Reflections on US Experience, Richard T. Ely Lecture». *The American Economic Review*, n. 67, February 1977, pp. 1-14.

[13] MARSHALL A.: *Money, Credit and Commerce*, London, MacMillan, 1924, 1973.

[14] ROBERTSON D.H.: *Britain in the World Economy*, London, Allen & Unwin, 1954.

Monetarism Yesterday and Today

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The volatile financial environment of the 1980s has revived doubts about the reliability of monetary targets, reversing the growing acceptance monetarism had attained in the 1970s. Long-time opponents of monetarism see its fall from favor as overdue justification of their opposition; its proponents see a serious but not fatal setback. A middle view is that the monetarist proposal of constant money growth no longer inspires confidence in its capacity to stabilize output and the price level, but that monetarism's considerable influence on monetary theory and policy continues. I shall comment on those developments and on the current status of monetarist ideas.

1. - Monetarism as a Reaction to Keynesianism

Monetarism took form as a school of thought in the early 1950s as a reaction to the low importance accorded monetary effects in early Keyesian theory (1). That theory properly emphasizes that central bank operations inject new money into the economy through financial markets. It follows, said the keynesians, that such injections do not in the first instance affect expenditures on goods and services (as is implied by the simple quantity theory of money). The injections

(1) The importance of the quantity of money on prices and economic activity has long been recognized. For the roots of monetarism in earlier monetary theories, see MUNDELL (1968); CAGAN [7]; and MAYER [18]. The Term "Monetarism" was first used by Brunner [3].

Advise: the numbers in square brackets refer to the Bibliography in the appendix.

instead change asset prices and interest rates and thus only indirectly affect borrowing and expenditures on capital goods. Thus this monetary link to aggregate demand can be weakened by an insensitivity of investment to changes in interest rates; indeed, the initial empirical studies reported a low or nonexistent sensitivity (Meade and Andrews [21]). Keynesian theory also supposes that the public's money balances are sensitive to interest rates: large changes in the money stock may be hoarded or dishoarded with little effect on interest rates, thus preventing even substantial changes in money from affecting investment.

Monetarists saw all this differently. For them, monetary changes have quite significant effects on interest rates, and investment expenditures, broadly conceived, are sensitive to interest rates and the availability of loanable fonds (2). Monetarists recognized, however, that investment expenditures generally involve considerable planning, so the response to changes in interest rates can take time. What Keynesian theory saw as no response, monetarist theory saw as a sizable if variable time lag.

These alternative interpretations implied important differences in policy. Keynesians dismissed monetary policy as ineffective for stabilization goals; they turned to fiscal policy, which in practice has proven a clumsy instrument unsuccessful as a stabilizer except in the automatic, cyclical response of tax revenues. Thus for the key to price and output stability, monetarists focused instead on controlling money growth. They saw, however, that because of lags in the effects, an active monetary policy would often be ill-timed and add to instability. They proposed a constant growth rate, which would avoid timing errors and had the added attraction of generating expectations of long-run price stability that would work to dampen any transitory inflationary pressures.

Two episodes in the United States, one in the early 1950s and another in the 1970s, provided timely empirical confirmation of the monetarist view and helped influence opinion. The first was the gradual removal of the country's wartime bond supports, which had

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(2) Recent theories that interest rates govern intertemporal substitutions of consumption probably go too far, however.

straitjacketed monetary policy by necessitating inflationary increases in the money supply. Proponents of continuing the bond supports argued that their removal would lead to large capital losses by the financial institutions that held the bonds and thus produce a serious liquidity crisis; continued support, they claimed, kept interest rates down and economic activity humming (3). In fact, removal of the bond supports did not produce a crisis, and the reduction of money growth brought down the inflation rate, just as the early monetarists had claimed it would.

The second episode, in the 1970s, involved the Phillips curve. This extension of Keynesian theory imagines a tradeoff between unemployment and the inflation rate. Aggregate demand policy can choose a lower rate of unemployment but only by producing somewhat higher inflation through money creation. At first it looked as though a little creeping inflation would be a small price to pay for the benefit of putting more people to work. But the tradeoff required a reduction in real wages, which was accomplished in the model by raising prices ahead of each increase in nominal wages. In practice the lag in the response of wages to inflation could not be maintained, and that failure proved the undoing of a stable tradeoff. Increased inflation pulled up the *expected* rate of inflation, and as a result wages accelerated to reestablish the equilibrium real wage. Persistent efforts use the tradeoff to reduce unemployment led to ever-increasing rates of inflation to stay ahead of the accelerating wages. Since the reductions in unemployment did not last, the Phillips curve was not stable and kept shifting outward. The easily perceptible shifts in the curve during the 1970s showed the crucial importance of money growth for inflation.

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(3) This view reflected what can be called the "twig theory" of monetary effects: taking monetary contraction too far would break the twig and send the economy into a tailspin. Supposedly, monetary restraint had no effect until it reached a certain threshold, at which it would precipitate a financial crisis. For example:

There appears to be a legitimate basis for the fear that if powerful monetary restraints are applied rapidly enough to check increasing expenditures within a short period of time they may be so disrupting to the capital markets as to cause a severe collapse of expectations and precipitate a decline in economic activity. If they are applied gently and gradually, on the other hand, they will effectively check increasing expenditures only after the liquidity of banks and other economic units has been gradually worn down. Before this point is reached a significant rise in prices may already have occurred (SMITH [26], and alzo SELTZER [23]).

2. - The Triumph of Monetarism

During the 1970s, consensus emerged that the escalating inflation of the time could be reduced only by eliminating the support of high money growth. It was recognized that such a disinflationary policy would involve a protracted contracting of economic activity and employment. The disinflation of the early 1980s confirmed the predictions of such a contraction, but the cost in terms of reduced output and employment proved far smaller than earlier pessimistic forecasts based on the faulty implications of a stable Phillips curve (Cagan [6]).

The importance of the money supply has now been universally accepted. Theoretical and empirical models of the economy, once based on Keynesian theory and thus assigning no significant role for money, are today mainly driven by a variable denoted as *M* acknowledging the predominance of the money supply in policy decisions.

The momentum of the monetarist revolution has even carried some theorizing full circle to the classical paradigm and beyond. The latest models of the economy assume not only instantaneous market clearing but also rational expectations. In these neoclassical models, anticipated money growth is fully absorbed by equilibrium price movements and leaves output unaffected. Since *systematic* government policies to counter departures from full employment would supposedly be anticipated, they would not affect output, say these theorists; unanticipated policy actions would be unsystematic and necessarily unrelated to economic activity and, therefore, would be destabilizing. Neoclassical theorists thus share with monetarists the view that active monetary policy would be suboptimal, although the two groups differ as to their reasoning. Monetarists believe monetary changes to affect output in the short run, but that a countercyclical policy would, on balance, be destabilizing because of the unpredictable length of its lags.

In acknowledging monetary effects on output in the short run, monetarists now ironically find themselves more in agreement with the policy views of the neoKeynesians than those of the neoclassicists. Yet the agreement does not go far: neo Keynesians still see an active countercyclical monetary policy as feasible and desirable, while monetarists reject it as destabilizing and inferior to stable money growth.

3. - The Recent Volatility of Velocity

The foundation of the monetarist policy of constant money growth is a predictable velocity, which means in practice that it shows only minor deviations from an unchanging trend. From 1953 to the mid-1970s, US velocity fluctuated cyclically around a fairly stable trend. Most of the fluctuations were attributed to instability in money growth and so would be largely eliminated by a constant-growth policy. This experience and a comparable one in Canada led to the announcements of annual monetary targets, beginning in the early 1970s in the United States and in 1975 in Canada.

Confidence in a predictable velocity was first damaged in the United States during the second half of the 1970s by growing overestimates of money demand — known at the time as the "case of missing money (Goldfeld [14]). A similar overestimate of demand for *M*1 occurred at the same time in Canada. Confidence totally collapsed in the United States with a dramatic departure from trend after 1980; velocity first declined in an unprecedented manner for several years and then resumed a wobbly movement upward but well below the previous trend of 3.25% per year. Canadian *M*1 velocity trend did not decline in the 1980s, but the introduction of attractive substitutes made it less reliable than it had been (Freedman [13]).

Thus ended the credibility of a constant money growth rule, at least until a new stable trend appears and gives evidence of permanence. For now, the authorities have downgraded monetary targets, even though the reduction of such targets has been acknowledged as having been important in reducing inflation during the early 1980s. The US and Canadian central banks still announce a monetary target, but only as one of various objectives, and they readily depart from the target or announce a new one whenever they judge that developments warrant a change. The dominant view is that policymakers must have the discretion to make adjustments for unpredictable changes in velocity.

Before 1980, the trend of US velocity, had been fairly stable for almost three decades. The major break in that trend clearly reflected substantial institutional changes. Financial development that produced new substitutes for money were mainly responsible. They

played a crucial role in the United States, where deposit-rate ceilings began to generate competitive pressures. First introduced in the 1930s, these ceilings did not seriously bite until 1970s inflation raised market interest rates to historically high levels. As competitive pressures to circumvent the ceilings intensified, innovations gave US Eurodollars, money market mutual funds, NOW accounts, and many others. The competition forced the authorities to raise the ceilings and eventually eliminate them. In 1980, *M*1 was redefined to include new interest-bearing checking deposits, such as ATS and NOW accounts (Simpson [23]). Their inclusion partly accounts for the "missing" money of the 1970s, but it does not do so fully (Cagan [4], [5]; Scadding 1987); other substitutes apparently also played a role (4).

The dramatic decline in US velocity in the 1980s appears to have been at least partially related to the redefinition of *M*1 to include NOW and super-NOW accounts, which spread nationwide contemporaneously. Their low turnover shows that they act not only as transaction balances but also as savings. Thus, including them in *M*1 attracted into it a sizeable amount of savings deposits and other assets. Thus, one suspects that the US decline in *M*1 velocity in the early 1980s and its subsequent low growth trend reflect a combination of positive growth in the turnover of transactions balances and zero growth in the turnover of savings deposits.

Nevertheless, the ratio of GNP to broader monetary aggregates (*M*2, *M*3, *L*, and even total debt), which include most of the likely sources of the shift into NOW accounts, also declined sharply in the early 1980s. So it is clear that more than this shift was at work.

Another contributor to the decline was a fall in nominal interest rates, as well as fear of runaway inflation, which made all financial assets more attractive. The interest rate elasticity of the demand for money, as estimated from earlier decades, was not, however sufficient to account by itself for the 1980s rise in money demand. Nevertheless,

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(4) The globalization of financial markets has played an unclear role in destabilizing velocity. Greater substitutability between national currencies can produce shifts in money demand. Eurocurrencies, which are not counted in the money supply of any country, may add to a world money supply and increase world inflationary pressures. The question is the extent to which changes in deposit balances outside the country affect the demand for domestic money and expenditures. The results of tests to confirm such effects empirically remain unclear.

some recent studies attribute the recent volatility of velocity to an increase in this interest-rate elasticity. Did the elasticity itself increase? Perhaps the new close substitutes for money raises its sensitivity to opportunity cost. Yet, even an increase in elasticity would not explain the 1980s decline in the velocity of the *broader* monetary aggregates. Substitutions among financial assets cannot explain an increased demand for all of them. Apparently other changes in financial instruments and practices also occurred. The nature of these changes remains unclear. As for as we know they may continue, so no assurance can be given that US monetary velocity will stabilize and hold to a constant trend.

In Canada the 1980s of daily-interest checkable savings deposits, which are included in *M*2 but not *M*1, interrupted the downward trend of *M*2 velocity. It is interesting that these deposits spread in Canada at the same time that NOW accounts and the like became popular in the United States even though Canada never had ceilings on deposit interest.

4. - Monetarist Responses to Volatile Velocity

Since constant money growth cannot, in view of an unpredictable velocity, guarantee price stability, monetarists have looked for a fallback position. In their view, the important thing is to guarantee long-run price stability by a policy rule that the monetary authorities can not deviate from. Without a stable velocity, such a rule has to allow for adjustments.

A rule can specificy its own adjustments. In this case, they can be based on *past* changes in velocity and, therefore, involve delays in adjusting to velocity changes. The problem of delays is illustrated by two earlier suggestions for a rule with built-in adjustments.

1) Fellner [10] proposed that the money growth target be adjusted automatically every four or five years in accordance with any change in the trend of velocity over the preceding business cycle. Cyclical fluctuations in velocity would average out, he said, and any change over the full cycle would largely reflect permanent changes in trend.

The problem with this proposal is that before each adjustment, money growth could be badly out of line with changes in the trend of velocity. Such misalignments might produce several years of inflation or recession before a new adjustment occurred. To maintain secular price stability each adjustment would have to offset the accumulated misalignments. These necessity of imposing monetary expansion or contraction to correct misalignments would be very disruptive and makes this rule unappealing.

2) Bronfenbrenner [1], [2] chose frequent adjustments precisely in order to avoid the buildup of errors. Proposing that the money growth target be adjusted each quarter to offset velocity changes in the preceding quarter, he presented statistics to show that this rule would have provided more stability in output that did the discretionary policies that where actually followed during the post-world War II period in the United States.

The difficulty with Bronfenbrenner's rule is that although full quarterly adjustments would prevent a buildup of errors, they would run the danger of whipsawing money growth as velocity fluctuates in short-run reversible movements. Even if, as some studies claim (for example, Gould and Nelson [15] (5), velocity follows a random walk (which implies that most changes are permanent and not reversible), the danger remains because money changes affect GNP with a lag of several quarters or more. Suppose an exogenous rise in GNP raises measured velocity (GNP/*M*). An immediate monetary contraction to reverse this disturbance would initially raise velocity further. The contraction would continue until GNP began to respond bringing down the initial rise in velocity. At that time the adjustment rule would call for expansions, and, against because of lagged effects, it would overshoot in the other direction. Thus, Bronfenbrenner's rule would introduce serially correlated movements in money and velocity that are not present in the historical data produced under a different

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(5) For an opposing view, see FRIEDMAN - SCHWATZ [13], pp. 208-15.

Recent considerations of econometric testing show that tests indicating the existence of random walks have low power. It now appears doubtful that aggregate series such as velocity can be described as random walks. See, for example, DE JONG and WHITEMAN [9].

operating policy. Since his historical analysis does not allow for lags in monetary effects, it does not prove the superiority of this rule.

Recently, the formulation of a monetarist rule has received renewed attention. The most interesting proposal comes from McCallum [20]. It relies on a feedback mechanism to adjust for permanent changes in velocity without overresponding to transitory changes. The optimal feedback response is estimated from historical data on monetary effects. For example, the formula estimated from the 1954-1935 period adjusts each quarter for the average change in velocity over the preceding 16 quarters and for one-fourth of the deviation during the preceding quarter of nominal GNP from its desired level. (That is, a full adjustment for deviations from desired GNP would take a year). The rule uses the monetary base, on the grounds that it will be not subject to changes in composition no matter how the media of payment evolve in the future (6).

Since such a rule dictates monetary adjustments in response to past changes in the velocity of the monetary base, misalignments would still occur, though they would be fully corrected within a year. Statistical analysis suggests that this rule would outperform the actual policies followed in recent decades. The statistical analysis to support this conclusion avoids the bias in Bronfenbranner's analysis by, in effect that including an estimate of the lagged response of GNP to monetary changes. That response is estimated from several macroeconomic models; to avoid ideological bias, they are chosen to represent the range of present professional opinion (neoKeynesian, neoclassical, and real business cycle models, and an unstructured vector autoregression system). The four models endorse this particular monetarist rule as superior to the actual historical policies.

Although these models are small, simplified versions of the economy and so would misrepresent the results of a real-life experiment, my guess is that they do not greatly distort the likely outcome of following such a policy rule. A more serious problem is revealed by estimates, produced from hystorical analysis, of the deviations in real GNP from trend that this rule would produced. The average quarterly

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(6) For an objection to use of the base here see FRIEDMAN [11].

deviation is at least 3.5 to 4% (McCullum [20], Table 4). Such deviations are not minor. (Moreover, they may be underestimated since they reflect a rule estimated from a past period (1954-1985), and future experience will usually call for a somewhat different adjustment coefficient. (Conceivably, the optimal rule could be re-estimated every decade or so, though doing so would add an unattractive complication. Even then the rule would always be somewhat out of date.)

An *average* deviation of 3.5 to 4% means that some deviations would be considerably largem — in theory, up to twice as large if GNP can be assumed to follow a normal distribution. To be sure, deviations of that size would be a major improvement over some of the egregious errors of past policies, such as the 1929-1933 contraction or the inflation of the 1970s. And the rule would, in fact, produce long-run price stability, for a given long-run growth in output. But it would tie the hands of the authorities in the face of recessions, financial crises, and supply shocks such as the OPEC oil price increase. It is hard to believe that the public and the government would or could patiently allow monetary policy to force a protracted contraction on the economy to correct for an error in projecting the trend of velocity. A discretionary response to disturbances can not be relied on to give a better total outcome, but justifications for departing from rules at a time of distress always seem overwhelming. A similar impatience stands in the way of that other once-accepted monetary rule, the gold standard, as well as radical alternatives such as privatizing money issue (7).

Thes monetary authorities continue to rely on a variety of indicators to make informed guesses about the combination of interest rates and money growth that will most likely counteract pressures pushing the economy away from noninflationary stable growth. In a particular period, the outcome of this procedure may be better than could be achieved under an adjustable monetarist rule, though in many historical periods discretionary policies have done worse. Past mistakes have been instructive, and the conduct of policy may be

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(7) See CAGAN [7] for my discussion of the problems of maintaining stability under the gold standard or private money supplies.

improving. Nevertheless, without a rule, present policy guarantees nothing and policymakers can decide to do anything. The extent to which inflationary pressures will be accommodated is completely uncertain.

5. - Recent Developments in Statistical Tests of Monetary Effects

In matters other than the search for a a policy rule to guarantee long-run price stability back the monetarist movement has not been unsucessful. It has brought money back to the center of macroeconomics — probably much sooner than Keynesian orthodoxy would have rediscovered money on its own. Accumulating evidence of the crucial role of money in major depressions and inflations has given support to the idea that there must be control over monetary growth. Although the role of money in ordinary business cycles remains controversial, its contribution to major cycles means it must have effects in minor cycles. But its importance there remains unclear because the endogeneity of the money supply in ordinary minor cycles obscures the cause-and-effect relationship (8).

New statistical tests have been proposed to settle the causality question (Granger [16]; and Sims [25]). After numerous applications in the literature (for a review, Cagan [8]), the Granger-Sims causality tests appear to support the causal role of money in general, but its statistical significance turns out to be at best marginal. It shows up in many of these studies as having a small or no effect at all on output and sometimes even none on prices. The reason for these puzzling results is that most of the fluctuations in money are statistically endogenous and, therefore, are not recognized as a possible causal influence. This seems to support the new theory that only unanticipated, unpredictable changes in money affect output.

A look into the statistical technique is clarifying. Causality tests remove the statistical correlations of a time series from their own past values and those of other related variables thereby eliminating any

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(8) Endogeneity means that money correlates with other variables that could be the initiating source of what we mistakenly interpret as monetary effects.

movements that could be attributed to prior movements in other variables. After the extraction of serial and cross-correlations, the items in the time series are reduced to random blips that have occurred independent of past movements in any of the other variables considered. These blips meet the condition of exogeneity, and thus they provide statistical evidence of causality only if they correlate with future blips (of output in this case) (9). It is the weak relation between these blips in money and output that puts to question the importance of money.

The problem here is that the statistical procedure removes all the systematic movements in money — the trend and cyclical fluctuations that correlate with other macro variables. But it is these cyclical fluctuations in money, not the random blips, that affect output (because the blips are smoothed out by financial markets and only cumulative changes in money build up to affect output and later prices). In eliminating endogenous movements, causality tests take out the very movements in money that produce its effects.

The new neoclassical theory argues that the systematic movements in money should indeed be separated and disregarded, on the argument that they are anticipated and are therefore fully absorbed by prices, leaving no effect on output (10). Here the monetarists and the neoclassicists part company. Everyone agrees that prices ultimately absorb all changes in the money stock, but how long does this take? Neoclassicists say prices respond in "one period." (Their theory defines one period as the time for information to be collected; in practice it means one month or one quarter). Monetarists, in contrast, agree with the Keynesians that prices are sluggish in the short run. On empirical grounds it seems to them that monetary changes initially affect output and are then absorbed by prices gradually over the duration of a typical business cycle. Thus variations in money growth, whether exgenous or not and whether anticipated or not, are for

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(9) Assuming expectations do not produce an effect before the expected causal influence appears in the data, which is not likely for monetary effects with several quartiers' lang.

(10) Many studies find, contrary to the new theory, that anticipated monetary changes affect output CAGAN [8]. But this finding is not conclusive: since anticipated changes are, by definition, endogenous, their correlation with output cannot be considered causal by the Granger-Sims criterion.

monetarists a leading source of fluctuations in output as well as in prices.

The causality tests, even if flawed, point to a serious empirical problem. All economic time series are endogenous in that their movements reflect a combination of economic relationships. The Granger-Sims causality test is one method of identifying causal influences, but it is highly misleading because it ignores the variety of relationships existing among a group of variables. If some variable affects output by working through money, we cannot disregard the link from money to output. If a change in money occurs for some other reason, its effects on output still operate. For example, the Federal Reserve Bank had prevented the US bank runs of the early 1930s from producing an endogenous decline in the money stock, would the contraction in activity have been as severe? Certainly not. Statistical endogeneity does not preclude a variable from supplying a crucial link, such that its changes can be expected to exert an important effect no matter what causes it to change.

Yet the Granger-Sims methodology forces US to recognize that structural econometric models do not help to identify the effect of such changes. Most of the techniques used to circumvent the problem of endogeneity in econometric models assume that lagged variables are exogenous, but that approach completely ignores the serial correlation in time series. The variables are *endogenous*, a fact that contradicts the assumption of regression analysis that independent variables be exogenous. The consequence is that nearly all time series regressions are unreliable, which explains why econometric studies so often contradict one another. Perhaps this is one reason why the latest research fad is to look for the effect of random supply shocks on output. If such shocks exist and are important, they are, in theory, exogenous and so represent one effect that time series regressions can legitimately test for, assuming the shocks can be properly isolated. That is all very well, but it is no help in studying variables that have important trend and cyclical effects.

The alternative empirical procedure for establishing the direction of economic effects is to focus on particular historical episodes in which important exogenous events can be identified. For example, money growth decreased in 1966 and again in 1969 because policy

makers decided to combat inflation. Following both actions, economic activity and prices contracted, phenomena that cannot be explained other than by the monetary contraction. These episodes provided isolated evidence on the dynamics of monetary effects. Time series regressions covering many years mix such revealing episodes with many ordinary cyclical fluctuations in which changes in money and other variables are correlated and provide no basis for identifying cause and effect. It is the unusual episode, which time series regressions obscure, that allows some identification of cause and effect.

6. - Conclusions: the Legacy of Monetarism

To sum up, everyday cyclical movements do not permit a formal statistical test of the role of money, and opinion varies on its contribution to fluctuations in output. Consequently, age-old controversies about monetary policy remain unsettled. Would stable money growth eliminate an important source of instability in the economy? Is monetary policy capable of moderating more sources of instability than it would add? The recent volatility of velocity has weakened the case for stable money growth without strengthening the case for discretionary countercyclical policies. Whether the conduct of monetary policy is ready for a scientific rule or should continue as the discretionary judgment of wiseheads remains an issue more unresolved than ever. Yet, although the monetarist goal of stable money growth appears unattainable, its legacy has brought recognition of the importance of monetary policy for economic stabilization and the necessity of controlling its growth.

BIBLIOGRAPHY

[1] BRONFENBRENNER M.: «Statistical Tests of Rival Monetary Rules», *Journal of Political Economy*, n. 69, January 1961, pp. 1-14.

[2] ——.: «Statistical Tests of Rival Monetary Rules: Quarterly Data Supplement», *Journal of Political Economy*, n. 69, December 1961, pp. 421-25.

[3] BRUNNER K.: «The Role of Money and Monetary Policy», *Federal Reserve Bank of St. Louis Review*, n. 50, July 1968, pp. 8-24.

[4] CAGAN P.: «Current Problems of Monetary Policy - Would the Gold Standard Help», in FELLNER W. (ed.): *Contemporary Economic Problems*, Washington (DC), American Enterprise Institute, 1982.

[5] ——: «Monetary Policy and Subduing Inflation», in FELLNER W. (ed.): *Essays in Contemporary Economic Problems: Disinflation*, Washington (DC), American Enterprise Institute, 1984.

[6] ——: «Containing Inflation» in CAGAN P. (ed.): *Essays in Contemporary Economic Problems: the Impact of the Reagan Program*, Washington (DC), American Enterprise Institute, 1986.

[7] ——: «Monetarism», in EASTWELL J. - MILGATE M. - NEWMAN P. (eds.): *Palgrave Dictionary of Economics*, New York, Stockton Press, 1987, pp. 492-97.

[8] ——: «Money Income Causality - A Critical Review of the Literature Since A Monetary History», in BORDO M. (ed.): *Money, History, and International Finance: Essays in Honour of Anna J. Schwartz*, Chicago: University of Chicago press for National Bureau of Economic Research, 1989, pp. 117-51.

[9] DE JONG D.D. - WHITEMAN C.M.: «Trends and Randon Walks in Macroeconomic Time Series: A Reconsideration Based on the Likelihood Principle», University of Iowa, *Economics Working Papers Series*, n. 89, February, 1989.

[10] FELLNER W.: «Criteria for Useful Targeting», *Journal of Money, Credit and Banking*, n. 14, November 1982, pp. 641-60.

[11] FREEDMAN C.: «Financial Innovations in Canada: Causes and Consequences», *The American Economic Review*, n. 73, May 1983, pp. 101-6.

[12] FRIEDMAN B.: «Conducting Monetary Policy by Controlling Currency Plus Noise», *Carnegie-Rochester Series on Public Policy*, n. 29, 1988, pp. 205-12.

[13] FRIEDMAN M. - SCHWARTZ A.J.: *Monetary Trends in the United States and the United Kingdom: Their Relation to Income, Prices, and Interest Rates, 1867-1965*, Chicago, University of Chicago press for National Bureau of Economic Research, 1982.

[14] GOLDFELD S.M.: «The Case of the Missing Money», *Brookings Papers on Economic Activity*, n. 3, 1976, pp. 683-730.

[15] GOULD J.P. - NELSON C.R.: «The Stochastic Structure of the Velocity of Money», *The American Economic Review*, n. 64, June 1974, pp. 405-18.

[16] GRANGER C.W.J.: «Investigating Causal Relations by Econometric Models and Cross Spectral Methods», *Econometrica*, n. 37, July 1969, pp. 424-38.

[17] JUDD J.P. - SCADDING J.L.: «The Search for a Stable Money Demand Function: A Survey of the Post-1973 Literature», *Journal of Economic Literature*, n. 20, September 1982, pp. 993-1023.

[18] MAYER I. (ed.): *The Structure of Monetarism*, New York, Norton, 1978.

[19] MCCALLUM B.I.: «Robustness Properties of a Rule for Monetary Policy», *Carnegie. Rochester Conference Series on Public Policy*, n. 29 1988, pp. 173-203.

[20] ——: «Targets, Indicators and Instruments of Monetary Policy», in *Monetary Policy in an Eva of Change*, forthcoming, Washington (DC), American Enterprise Institute, 1989.

[21] MEADE J.E. - ANDREWS P.W.S.: «Summary of Replies to Question on Effects of Interest Rates», *Oxford Economic Papers*, n. 1, 1938, reprinted in WILSON T. - ANDREWS P.W.S. (eds.): «Oxford Studies in the Price Mechanism», *Oxford Economic Papers*, 1951, pp. 27-30.

[22] MUNDELL R.: «The Origins and Evolution of Monetarism», in JANSEN K. (ed.): *Monetarism, Economic Crises and the Third World*, London, Frank Cass, 1983, pp. 43-54.

[23] SELTZER L.H.: «Is a Rise in Interest Rates Desirable or Inevitable?», *The American Economic Review*, n. 35, December 1945, pp. 831-50.

[24] SIMPSON T.D.: «The Redefined Monetary Aggregates», *Federal Reserve Bulletin*, n. 66, February 1980, pp. 97-114.

[25] SIMS C.A.: «Money, Income and Causality», *The American Economic Review*, n. 62, September 1972, pp. 540-52.

[26] SMITH W.L.: «On the Effectiveness of Monetary Policy», *The American Economic Review*, n. 46, September 1956, pp. 588-606.

II - TRADE BALANCE, STOCK MARKETS, AND FOREIGN EXCHANGE RATES

Trade Balance and Exchange Rates (*)

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One of the most remarkable facts about the development of international economics in the past 50 years has been the persistence of the belief that a country can improve its balance of trade by devaluing its currency. More generally, it is believed that just as a profit-maximizing monopolistic firm producing under constant costs can improve its sales and thereby its profitability by lowering its costs and thus its selling price provided the elasticity of demand for its product is greater than unity, a country can be become more "competitive" and improve its balance of trade by cutting the prices of its export goods provided the sum of its elasticity of demand for imports and the foreign elasticity of demand for its exports exceeds unity. (For brevity, the terms "balance of trade" and "trade balance" are used rather improperly throughout this paper to stand for the balance of payments on goods and services. The term "foreign balance" has an equivalent meaning.)

In this paper, I argue that that this doctrine, which emerged in the 1930s and was widely prevalent in the 1940s and 1950s, is based on some logical misconceptions and is valid only in limited circumstances. It is logically equivalent to the doctrine that by cutting prices a country can "outcompete and undersell the rest of the world all

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(1) It should be noted that HABERLER ([22], p. 396n) stressed his analysis of depreciation applied to a situation in which a country had a deficit in its total balance of

along the line" (Haberler [23], p. 437), a doctrine that Haberler showed is at variance with the law of comparative advantage and that Robinson [50] showed is inconsistent with the dynamic stability of the Humean adjustment process (Hume [28]). Curiously, the logical equivalence was overlooked, and many writers who rejected the dostrine of the possibility of a general underselling accepted, and indeed strongly advocated, the particular form of it stating that such underselling could be accomplished by means of currency depreciation (1).

In the next section I review the "elasticity approach" to the balance of payments and argue that, as developed by Robinson [49] and Machlup [39], it was a theory of how, in a flexible exchange rate regime, the exchange rate would adjust so as to bring the current balance into equality with the capital balance in response to autonomous capital movements in 1940s, however, this theory was used to reverse the causal relationship between capital movements and exchange rates and to apply to a pegged exchange rate regime (Lerner [38], pp. 377-8). The notorious "Marshall-Lerner condition" (Hirschman [27]) — which states that the world excess demand for a country's exportable good is a decreasing function of that country's exchange rate — is a condition for dynamic stability in a world economy in which the exchange rate will depreciate whenever that commodity is in excess world supply. The "improved" balance of trade that results when a country's currency is below its equilibrium value is necessarily a disequilibrium balance, one that will disappear if the dynamic adjustment mechanism is allowed to own its course. The theory of the effect of currency depreciation in a pegged exchange rate regime is, therefore, necessarily a disequilibrium theory (Mundell [45]), and the question of the consequences of altering the exchange rate cannot be answered without taking account of the different means by which it may be pegged. Different means generally result in different consequences. In any case, the theory of the consequences of

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payments — that is, was losing reserves — and expressly denied that he would prescribe this remedy for a country that had merely a current-account deficit. Thus, his analysis may be interpreted as coming under the heading of the first of the three mechanisms discussed in the section of this paper on the *Elasticity Approach.*

Advise: the numbers in square brackets refer to the Bibliography in the appendix.

varying adjustable pegged exchange rates is inapplicable to a flexible exchange rate regime such as we have today.

In the following section I discuss other mechanisms by which a currency depreciation might improve a country's balance of trade; these are mechanisms by which, in accordance with Alexander's [1] seminal formulation, a currency depreciation can change the difference between income and absorption. One of these mechanisms requires that wages be initially above their market-clearing levels, resulting in unemployment, and that the marginal propensity to save be positive. Then depreciation lowers real wages and increases employment in export and import-competing industries, causing unemployment in competing foreign industries; the fall in income abroad causes a fall in saving to match the increase in saving brought about by the increased income at home. Clearly, such a mechanism is peculiar to a situation of world unemployment. Another mechanism involves adjustment of cash balances, producing an essentially temporary effect on the trade balance. A third mechanism involves using currency depreciation, via inflation, to lower the real value of a country's budget deficit and to redistribute income from low to high savers.

The main conclusion of these sections is that for depreciation to improve a country's foreign balance it must, in all but a few exceptional cases, give rise to a reverse capital movement. This movement brings about resource reallocation in both countries that may (but need not necessarily) entail changes in relative prices, but any that occur are the consequence, not the cause, of the improved trade balance. Greater competitiveness does not improve the trade balance; rather, it is an improved trade balance that increases competitiveness. Further, I argue that under present conditions it is only under special circumstances that one can expect a currency depreciation to improve a country's trade balance, and even then the improvement is likely to be only temporary. This argument is not, of course, a revolutionary thesis but merely a reaffirmation of the classical doctrine according to which, in Mill's ([44], p. 175) words, «a depreciation of the currency does not affect the foreign trade of the country». The most obvious way in which the United States can attain a sustained improvement in its foreign balance by depreciating the dollar (and then only when that balance is measured in foreign currencies) is by letting the consequent

inflation reduce the real burden of government expenditures, particularly the interest on the foreign debt.

In the last section, I analyze some data presented by Klein [36] on the US current-account and federal budget balances as well as on price competitiveness (the inverse of the «real exchange rate») and conclude that there is very slender empirical support for the hypothesis that a decline in the value of the dollar will improve the US current-account balance and that this hypothesis has been becoming less and less credible in the face of a declining dollar and continuing external deficits.

1. - The Elasticity Approach

The story begins with the classic papers by Robinson [49] and Machlup [39]. In Robinson's ([49], p. 188): "The theory of the exchanges may be regarded as the analysis of the manner in which movements of the balance of trade and the balance of lending are equated to each other". In the analysis that ensues, it becomes evident that the "balance of lending" is to be considered the exogenous variable and the "balance of trade" the endogenous; thus, p. 201: «A change in the desire to lend abroad can bring about a change in the balance of trade (and consequently in the actual rate of lending) only by way of its effect in altering the exchange rate».

She ([49], p. 183n) had stated at the outset that "it will be obvious that my main endeavour is to elaborate the hints thrown out by Mr. Keynes in his *Treatise on Money*, Chap. 21"; in that chapter, Keynes [34] provided the theoretical basis for his earlier [32] treatment of the transfer problem in an analysis in which he expressed his indebtedness to Taussig [56] by saying that "his treatment of the influence of international investment on the price-levels in different countries is far in advance of any other discussion of the subject (2).

(2) It would be misleading not to mention that preceding this statement Keynes remarked: «Professor Taussig is, I think, a little too ready to assume that exports and imports adjust themselves to the other factors in the situation, rather than — in part — the other way round». Yet, KEYNES' (pp. 332-6) own analysis started from the Taussigian premise: «Let us then suppose that the attractions of investment increase in country *A* but not in country *B*».

Thus, the proper way to interpret Robinson's paper is, I believe, as a contribution to the theory of the transfer problem, that is, to the theory of how the balance of trade adjusts to autonomous capital movements (3).

For the special case of an infinite elasticity of supply of exports the model can be briefly set out as follows Chipman [13]. Suppose that each country produces, at constant costs, only an export good and a nontradable good. Country 1 produces commodities 1 and 3; it exports commodity 1 to and imports commodity 2 from country 2. Likewise, country 2 produces commodities 2 and 3; it exports commodity 2 to and imports commodity 1 from country 1. Then the equilibrium price *ratio* p_k^k / p_3^k, is fixed for $k = 1, 2$ (where p_j^k is the price of commodity j in country k, denominated in country k's currency). Suppose further that (as fairly explicitly assumed in Taussig, [56]) each country pursues monetary policies designed to stabilize the price of the domestic (nontradable) good; then the price of the export good will also be stabilized. Defining the exchange rate, e, as the price of country 2's currency in terms of country 1's and assuming that arbitrage equates prices between countries, we have $e = p_j^1/p_j^2$ for both tradable commodities $j = 1, 2$. Combining this with the price stabilization assumption we have:

$$(1) \qquad e = \frac{p_1^1}{p_1^2} = \frac{p_1^1}{p_2^2} \cdot \frac{p_2^2}{p_1^2} = \frac{p_1^1}{p_2^2} \cdot \frac{p_2^2}{p_1^2} \alpha \frac{p_2^2}{p_1^2},$$

where $\bar{p}_1^1$ and $\bar{p}_2^2$ are the stabilized prices of countries 1 and 2's export goods. Thus, in this case, the exchange rate is proportional to country

(3) The theory of the transfer problem as such originated as the theory of how countries' economies adjust to a unilateral transfer (such as a reparations payment) from one to an other. Taussig's analysis, however, treated private capital movements as exogenous and in every way as one would treat a unilateral transfer. One might think of this relationship as being embedded in a recursive model in which capital movements are in turn influenced by intertemporal comparative advantage, as indicated by differential rates of return to capital in their absence. Of course, a loan ar direct investment from one country to another comes with the expectation of future payment of interest and principal and thus has wealth effects that distinguish it from a gift. These effects may be very important. They were, however, neglected by Taussig, Keynes, and Robinson and are similarly neglected in my analysis.

2's terms of trade. This is the one case in which it is legitimate to "confuse" the exchange rate with the terms of trade.

Now, as shown in Chipman [13], we can set up for each country a "trade-demand function":

$$z^k_j \equiv x^k_j - y^k_j(p^k_1, p^k_2, Z^k), \tag{2}$$

expressing the net import z^k_j of commodity j by country k, equal to the difference between consumption x^k_j and production y^k_j, as a function of the prices of the two tradables and the deficit Z^k in country k's balance of trade. We postulate the dynamic adjustment process,

$$\frac{de}{dt} \propto \hat{h}^1_1(\bar{p}^1_1, e\bar{p}^2_2, -eL^2) + \hat{h}^2_2(\bar{p}^1_1/e, \bar{p}^2_2, L^2) \tag{3}$$

where $L^2 = Z^2 = -Z^1/e$ is a loan or transfer from country 1 to country 2, denominated in country 2's currency (Chipman [13], p. 752). Equation *(3)* states that the rate of change of the exchange rate — which by equation *(1)* is proportional to the price of commodity 2 relative to the price of commodity 1 (denominated in either currency) — is proportional to the world excess demand for commodity 2. Now the relation *(3)* remains valid if one multiplies the terms on the right by $\bar{p}^2_2$ to obtain the dynamic adjustment process:

$$\frac{de}{dt} \propto \Phi(e, L^2) \equiv \bar{p}^2_2 \hat{h}^1_2(\bar{p}^1_1, e\bar{p}^2_2, -eL^2) + \bar{p}^2_2 \hat{h}^2_2(\bar{p}^1_1/e, \bar{p}^2_2, L^2). \tag{4}$$

Equation *(4)* states that the rate of change of the exchange rate is proportional to the *value* (in country 2's currency) of the world excess demand for commodity 2. Now, using the budget equation for country 2's trade utility function:

$$p^2_1 h^2_1(p^2_1, p^2_2, Z^2) + p^2_2 \hat{h}^2_2(p^2_1, p^2_2, Z^2) = Z^2 \tag{5}$$

and substituting it in equation *(4)*, we obtain the equivalent dynamic adjustment process:

$$(6) \qquad \frac{d\,e}{d\,t} \infty \Phi\,(e, L^2) = D_2^1\,(e, L^2) - D_1^2\,(e, L^2) + L^2$$

where:

$$(7) \qquad D_2^1\,(e, L^2) = \bar{p}_2^2\,\hat{h}_2^1\,(\bar{p}_2^2\,, -\,e\,L^2)$$

is country 1's demand for country 2's exports of commodity 2, denominated in country 2's currency, and

$$(8) \qquad D_1^2\,(e, L^2) = \frac{\bar{p}_1^1}{e}\,\hat{h}_1^2\,(\bar{p}_1^1 / e, \bar{p}_2^2\,, L^2)$$

is country 2's demand for its own imports of commodity 1, denominated in its own currency (4). The functions *(7)* and *(8)* (the former augmented by L^2) correspond to Machlup's [39] formulation of country 1's demand for and supply of foreign exchange; in Robinson's formulation the difference between *(7)* and *(8)* is described as the "balance of trade", which is to be equated to the "balance of lending" $-\,L^2$.

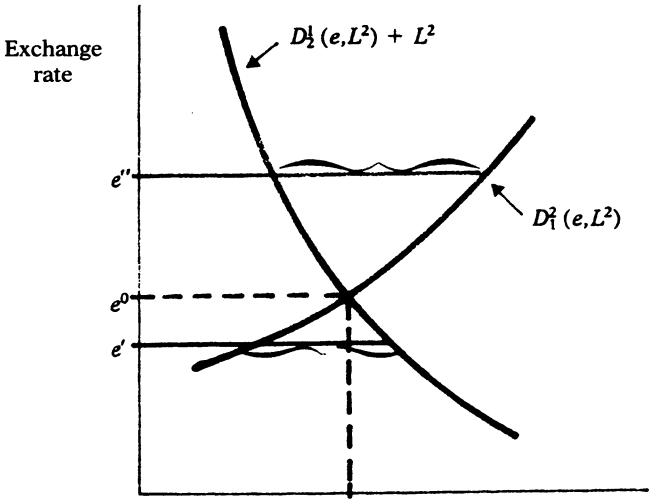
It is at this point that the unwary fall into a trap of terminology. In Graph 1, the functions $D_2^1\,(e, L^2) + L^2$ and $D_1^2\,(e, L^2)$ are shown for a given L^2; when the tradable goods are normal that is therefore gross trade substitutes), the first of these functions is downward sloping and the second upward sloping. What about stability? If the exchange rate, e, is above its equilibrium value, $e^0 = \bar{e}\,(L^2)$, we want it to fall. If the exchange rate is below that equilibrium value, we want it to rice.

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(4) See DORNBUSCH ([15], p. 898) for a formula similar to *(6)*. Dornbusch's formula expresses the excess demand as functions of the exchange rate (terms of trade) and the countries' national incomes, which is not quite correct since the latter are dependent on prices and cannot legitimately be treated as parameters. The above formulation in terms of terms of trade-demand functions avoids this problem. The general point being developed in the text, which I believe was first made by Dornbusch, is unaffected by this error.

GRAPH 1

DEMAND FOR AND SUPPLY OF FOREIGN EXCHANGE AS FUNCTIONS OF THE EXCHANGE RATE



That is, we want $d\,e / d\,t \infty \Phi\,(e,\, L^2)$ to have the sign opposite to $e - e^0$; hence we want $\vartheta\,\Phi / \Phi\,e < 0$. In particular, this means from equation *(6)* that we want the balance of trade function, $D_2^1\,(e,\, L^2) - D_1^2\,(e,\, L^2)$, to be a decreasing function of the exchange rate, which requires that the supply curve in Figure 1 intersect the demand curve from below (5). This desire is often phrased by saying that "a decline in the exchange rate will improve the balance of trade". But this is a very dangerous use of words. What increases is the value of the excess demand for commodity 2 the value of country 2's balance of trade *function.* It is quite fallacious to say that a fall in the exchange rate below its equilibrium value will improve the *equilibrium* balance of trade; on the contrary, the postulated dynamic adjustment process ensures that the excessive balance of trade produced by a below

(5) This, of course, yields the so-called Marshall-Lerner condition for stability (HIRSCHMAN [27]), generalized to allow for a nonzero initial trade balance. Note that the generalized formula given by Hirschman is fautly (CHIPMAN [13], p. 754).

equilibrium exchange rate will automatically be eliminted as time progresses, in other words, the excessive balance of trade surplus over the equilibrium level cannot be sustained (6).

Specifically, suppose the equilibrium exchange rate is equal to e^0 as indicated in Graph 1, and that for some reason it temporarily drops to e'. Then the demand for country 2's currency exceeds the supply; the fact that it does so follows from the Marshall-Lerner stability property stipulated above. But the reason this is a stability property is that, as by equation *(4)*, if the demand exceeds the supply, the exchange rate will rise. Consequently, the drop in the exchange rate and the corresponding improvement in the balance of trade *must* be temporary; this is what is meant by dynamic stability. Likewise, if for

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(6) The fallacy appears to have its roots in LERNER's ([38], p. 347) discussion of exchange rates. Lerner initially described stability conditions applicable to a flexible exchange rate regime and explained how trade imbalances would have to be temporary. At the point at which he introduced the famous elasticity formula (LERNER [38], pp. 377-8), however, the earlier stability argument appears to have been forgotten. The most likely explanation is a terminological confusion between a desired (ex ante) balance of trade *function* and an equilibrium (ex post) balance of trade.

So beguiling was this argument that is has dominated thought on the theory of exchange rates for the last 50 years. It was quickly accepted by HANSEN [25], who took up Lerne's theme of "elasticity pessimism" (a term later coined by MACHLUP [40]), and followed up by HABERLER [21], who supported the optimistic view concerning the elasticities, noting the equivalence (which holds in the special case of as infinitely elastic supply of exports) of Lerner's stability condition to MARSHALL'S ([43], p. 354) — a condition that, in fact, goes back to MILL ([44], p. 158). The approach was further developed by HIRSCHMAN [27]. It is important to keep in mind the context in which Hansen and Haberler wrote; they were concerned with the International Monetary Fund concept of "fundamental disequilibrium" and with the questions of how to define it and to remove it once it arose. The arguments that were used for currency depreciation are not fallacious if they are presented as applying to a *disequilibrium* situation and if one is careful to describe the nature of the forces preventing equilibrium from taking place. The fallacy consists in interpreting the argument as a proposition in comparative statics (involving the comparison of two equilibria), and in neglecting to specify the machanism by which the exchange rate is pegged and then extending the proposition to all situations involving a change in the exchange rate.

To my knowledge, the nature of the terminological fallacy was first brought to light by DORNBUSCH ([15], p. 898), who referred to the "popular misconception" that "gives the Marshall-Lerner condition as the criterion for a successful devaluation" and explained: «The misconception here is to indentify the world excess demand for exportables with the balance of payments and the terms of trade with the exchange rate und the failure to recognize that only in equilibrium will foreign excess demand for exportables equal the domestic excess supply of that commodity and, conversely, for importables».

It is astounding that seven years later DORNBUSCH ([17], pp. 58-67) appears to have completely forgotten this perceptive insight.

some reason the exchange rate is "overvalued" as indicated by e'' in Graph 1 — that is, if the supply of country 2's foreign exchange exceeds the demand — then it must necessarilly fall back to its equilibrium value.

It might be argued that if the model is modified so as to allow the exchange rate to be pegged at e'', then pegging it at a lower rate (say, at e^0) will improve the trade balance, and that in this sense we can say that a currency devaluation improves the balance of trade. This is a treacherous argument, however, since it depends very much on the mechanism by which the exchange rate is pegged. Let us consider three distinct mechanisms (not pretending that these are exhaustive):

1) possibly the overvalued exchange rate is propped up by country 2's running down its reserves or engaging in short-term borrowing; then pegging it at a lower rate will allow equilibrium to be restored. Within the framework of model, this is the only logical meaning that can be attached to the proposition that a devaluation improves the balance of trade. But it applies only to a regime of pegged exchange rates in which the dynamic adjustment mechanism is not allowed to function.

Even then, the description just given is very incomplete. We have to ask ourselves, why was the country running out of reserves in the first place? One possible reason is that the government had been running a budget deficit and the country was living beyond its means (7). If the devaluation was accompanied by austerity measures or an incomes policy to reduce this deficit, then it is to these measures and policies that one should properly attribute the restoration of balance. As will be indicated presently, this kind of change would be better analyzed in terms of *shifts*, rather than movements, along the curves. The drop in the exchange rate (or the possibility of its being pegged sustainably at a lower rate) would then be an incidental consequence

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(7) Adherents of the monetary approach to the balance of payments. Stress that balance of payments deficits can only be sustained by continued credit creation (JOHNSON [29], p. 157). If all countries pursue such policies simultaneously, however, they will obviously not all have simultaneous balance of payments deficits. Thus, the kind of situation envisaged by Johnson must be one in which other countries are simultaneously engaging in credit contraction. In this case, we have an example of what MACHLUP [42] called "involuntary lending" from the contracting to the expanding countries, enabling the latter to live beyond their means (CHIPMAN [10], p. 75).

of the austerity measures that were the real cause of the improvement in the foreign balance (8). On the other hand as I argue in the next section, one can expect that a currency depreciation will *directly* reduce the real value of a government's budget deficit and there by improve its foreign balance (at least, if that balance is denominated in foreign currency); the fall in the exchange rate then operates through the capital account, rather than the current account, in restoring balance.

To be sure, a reduction in the budget deficit will directly affect both the current and capital accounts. On the current account, it will result in an increased supply of exports (since less is spent on exportables at home) and a reduced demand for imports — that is it will directly shift the country's balance of trade function downwards — and this may be expected to exert a downward pressure on prices of both tradables (and in the model at hand, in the country's terms of trade, since the reduction in demand for nontradables will cause resources to move from nontradables to tradables, increasing the supply of exports). But this change in relative prices alone will not be enough to induce the foreign country to reduce its export surplus (reduce its excess of income over expenditure); for this, some inducement must come from the capital account. On the capital account, the reduction in the devaluing country's budget deficit will directly lower its demand for loanable funds from the foreign country, and this will release the funds previously lent by the foreign country for use in consumption expenditures. Of course, the natural price to achieve this result is the rate of interest, although it is not included in the simple model introduced above. Only in this way will the foreign country be induced to reduce its export surplus. Thus, it is essential that the currency depreciation (and associated austerity measures) act first by bringing about a reverse capital movement toward the foreign country.

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(8) Commenting on empirical studies of the effects of devaluations during the Bretton Woods era, BLACKHURST [5], p. 63 wrote: «The problem with such studies is that they beg the key question of the individual contribution of the exchange-rate change. What would have happened to the trade balance if the wage restraints, the restrictive monetary and fiscal policies, and so forth had been introduced in the absence of a devaluation? In other words, what difference did the devaluation make?»

I was able to locate only one empirical study that addressed this question.

In short, the only way country 2's exchange rate could have become overvalued at e'' is through a rise in absorption — financed by foreign borrowing — and the only way to peg it back to the equilibrium level, e^0, is to reduce absorption so that the country can live within its means (9). But for this mechanism to yield a world equilibrium, country 1 must be induced to increase its absorption according, which requires that the reduced absorption in country 2 be translated into a capital outflow to country 1 (or a fall in capital inflows from country 1).

If this is how the argument is understood, it is logically unobjectionable, but the absorption implications for of pegging the exchange rate at different levels are rarely stated explicitly. In any case, the method of analysis is unnecessarilly awkward since the changes in absorption and the resulting induced capital movements are better handled in terms of shifts of the curves;

2) another way an overvalued currency could be supported is by means of exchange controls or similar trade restrictions, preventing the realization of the excess of country 2's demand for imports D_1^2 (its supply of its own currency), over the foreign demand for its currency including the loan payment), $d_2^1 + L^2$. In such a case, one would have to be very careful to modify the model to take account of the means by which the controls are implemented and the expenditure is diverted from imports. That this was a typical situation during the Bretton Woods era was a point stressed by Sohmen [52] (10);

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(9) This could (but does not necessarily) mean that absorption should be reduced to equality with income — that is, that the original equilibrium position, e^0, corresponds to balanced trade ($L^2 = 0$). It is more reasonable however, to allow for long-term capital movements in one direction or the other.

(10) Some subtle theoretical points need to be mentioned here. A mere restriction of imports will simply result in an equal fall in exports measured in external prices. A tariff or quota will worsen the trade balance denominted in *internal* (but not external) prices, by the amount of the tariff revenues or profits of holders of import licences; further, it will in general improve the country's terms of trade and hence, in the model being considered here, strengthen its exchange rate. Thus, under a flexible exchange rate regime, the removal of a tariff or import quota will simultaneously reduce the trade deficit reckoned in internal prices and the exchange rate, but it will have no effect on the balance of trade reckoned in external prices. The argument, therefore, has to be that in a pegged exchange rate regime, a devaluation accompanied by removal of import controls will improve the trade balance denominated in domestic prices, but it will have no effect on the trade balance denominated in foreign prices.

Noted further that the validity of this argument is limited to a model, such as the

3) a third interpretation might be that the monetary authorities support the overvalued exchange rate by purchasing the country's own currency and selling foreign currency. They can do this only for a limited period of time (since the stock of foreign currency is finite). Mosecover it will entail a fall in the money supply — which is incompatible with the a priori assumption that the monetary authorities are stabilizing the price of the export and nontradable good. The same point applies if the monetary authorities try to devalue the currency, moving from the equilibrium rate, e^0, to the lower exchange rate, e', by printing more money and purchasing foreign currency. Although this operation could go on forever, the rise in the money supply would violate the assumption of stabilized domestic and export prices or, equivalently, would result in shifting the curves downward in such a way as to nullify the effect on the trade balance (11).

It is clear that in each of the three mechanisms described, some other variable must change along with the exchange rate. That variable differs in each case. The first requires a fall in national expenditure (absorption), the second the removal of exchange or import controls and, the third an increase in the money supply. Many of the controversies in the 1940s and 1950s concerning the effects of a devaluation remained unresolved owing to the failure to make these three mechanisms (or others) explicit. Although all three mechanisms were involved during the Bretton Woods era (no doubt explaining why countries such as France experienced "successful" devaluations while others such as Great Britain did not), in the present era of flexible exchange rates, only the third one is available.

From the above analysis, it follows that the concern with "elasticity pessimism" (Lerner [38], p. 379; Machlup [40]) is misplaced. Many critics of policies to depreciate the exchange rate tend to base

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one developed above, in which the exchange rate is proportional to the terms of trade. In general, although the removal of import restrictions will worsen the terms of trade and improve the balance of trade denominated in domestic prices, it need not have any effect on the exchange rate; hence a currency depreciation may be irrelevant.

(11) For a proof in the case $L^2 = 0$ as well as the case in which the autonomous change in capital movement is denominated in country 1's currency, (that is, the shift parameter is $L^1 = e\,L^2$, rather than L^2, see CHIPMAN ([13], p. 761). See also HABERLER ([24], p. 213), who recognized this possibility and thus presented his analysis as describing the "impact-effect of the depreciation" ([24], p. 197).

their arguments on allegedly low values of the elasticities, rather than on the kind of arguments advanced above. In those terms, as will become clear in the next section, one can be an "elasticity optimist" and yet believe that a depreciation will have little or no effect or even a negative effect on the balance of trade (12). Conversely, one can be an "elasticity pessimist" and yet believe that a depreciation can have a very substantial positive effect on the balance of trade (see, for example, Polak [47]).

It is sometimes argued that those who deny that a currency depreciation will improve a country's balance of trade must believe that exchange rates are not important or that relative prices do not matter. Certainly, such a charge cannot be levelled against this writer (Chipman [10], p. 74). In the analysis of the previous paragraphs, it is clear that: 1) one cannot expect changes in relative prices of imports and exports to affect economic agents' current budget constraints (as opposed to the allocation of their expenditures under their given budget contraints), and 2) the nominal exchange rate cannot by itself affect relative prices, except indirectly by affecting the real value of capital movements. The fallacy in popular reasoning comes from confusing the role of endogenous and exogenous variables (13). The

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(12) As shown in CHIPMAN ([13], pp. 763-4), if a country initially has a surplus in its balance of trade, denominated in its own currency, then a depreciation will lower the foreign-currency value of this surplus, (worsen its trade balance), causing an inward transfer to the country and thus, in the model under consideration, an improvement in its terms of trade. And this is fully in accord with the fulfillment of the Marshall-Lerner conditions.

(13) DORNBUSCH ([16], p. 281) has given a formulation that tends to obscure this point: «It is quite obvious that an exchange rate change . . . exerts real effects because it is accompanied by a policy which ensures that the exchange rate change will cause the *relative* price of traded goods to change in terms of nontraded goods. It will increase at home and decline abroad. The internal balance policy ensures, too, that absorption declines in the home country and increases abroad, and it therefore "validates" the real effects of the exchange rate change». I interpret this statement to mean that the *announcement* of a fall in the exchange rate triggers, in accordance with a predetermined government policy, a fall in absorption at home and a rise in absorption abroad or, equivalently, a transfer from the home country to the foreign country (for example, following the announcement, the US Congress immediately increases taxes and foreign governments immediately reduce (DORNBUSCH [16], p. 283). This transfer improves the trade balance and brings about ("validates") the fall in the exchange rate that had previously been announced. Ergo, the fall in the exchange rate caused the improvement in the trade balance.

We are here in the realm of philosophy, not economics. I agree that, in strict logic under the circumstances described, it could be said that the *announcement* of the fall in

Robinson theory is a logically impeccable theory of how the exchange rate adjusts to exogenous changes in capital movements so as to equate the balance of trade to the balance of lending; the capital movement is the exogenous variable, and the exchange rate is the endogenous variable. As Kemp [30], pointed out however, it is simply a logical fallacy to turn the theory on its head and interchange the roles of these two variable.

The comparative statics of the Robinson-Machlup model are illustrated in Graph 2. Assume a transfer in the amount of L^2 from country 1 to country 2 (in the latter's currency. If the transfer is increased to $L^2 + \Delta L^2$, both curves shift to the right as shown (showing incidentally that these curves do not move independently and hence are not very useful constructs). The result is a new equilibrium exchange rate, $\bar{e}\ (L^2 + \Delta L^2)$, which is generally higher than old one, $\bar{e}\ (L^2)$ (14). Under the special assumption that the exchange rate is proportional to country 2's terms of trade, when country 2 receives more payments not only will it increase its expenditures on its exportable good (say, by the same amount that country 2 reduces its expenditures on this good-commodity 2), but it will also increase its expenditures on the nontradable good. The increase will require diverting resources from the export to the

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the exchange rate caused the improvement in the balance and the actual fall in the exchange rate. But I do not see how one can conclude that these results were caused by the *actual* fall in the exchange rate. Given any sensible use of words, it was the transfer and the resulting improvement in the trade balance that caused the fall in the exchange rate. And one may ask how this type of reasoning would be applied to a model in which a transfer has no effect on the exchange rate.

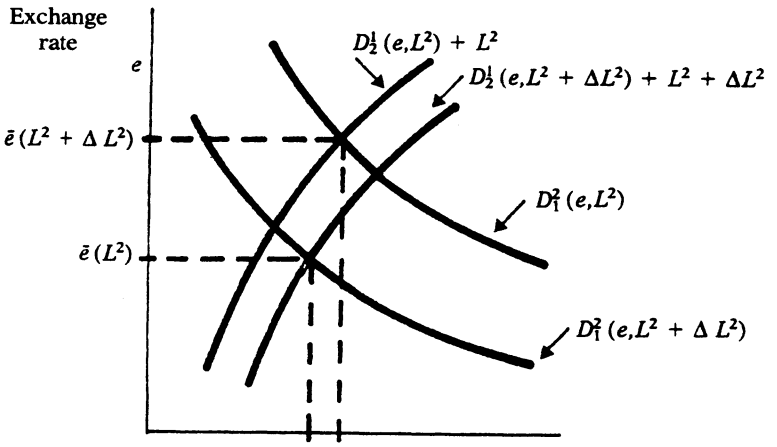
(14) Under the given assumptions supplemented by similarity and separability assumptions on preferences, $D_2^1 + L^2$ shifts more than D_1^2 since SAMUELSON'S [51] transfer criterion applied to the trade demand functions $p_2^2\, \vartheta\, \hat{h}_2^2 / \vartheta\, Z^2 > p_2^1\, \vartheta\, \hat{h}_2^1 / \vartheta\, Z^1$; is satisfied; that is, a transfer improves the receiving country's terms of trade (which in this model is proportionate to the exchange rate). This is because of the decomposition

$$\frac{\vartheta\, \hat{h}_2^1}{\vartheta\, Z^1} = \frac{\vartheta\, h_2^1}{\vartheta Y^1}; \quad \frac{\vartheta\, \hat{h}_2^2}{\vartheta\, Z^2} = \frac{\vartheta\, h_2^2}{\vartheta Y^2} + \frac{a_3^2}{a_2^2}\, \frac{\vartheta\, h_3^2}{\vartheta Y^2},$$

where $\vartheta\, h_j^2 / \vartheta\, Y^2$ is the partial derivate of country 2's demand for commodity j with respect to its disposable national income Y^2, and a_j^2 is the amount of labor required per unit of output of commodity j in country 2. If $\vartheta\, h_2^1 / \vartheta\, Y^1 = \vartheta\, h_2^2 / \vartheta\, Y^2$ and $\vartheta\, h_3^2 / \vartheta\, Y^2 > 0$, then country 2 will have a higher marginal *trade* propensity to consume commodity 2 (its export good) than country 1. For details, see CHIPMAN ([13], pp. 751-2).

GRAPH 2

SHIFTS IN DEMAND AND SUPPLY CURVES OF FOREIGN EXCHANGE RESULTING FROM A CHANGE IN CAPITAL MOVEMENT



domestic industry; to make up for the fall in output of the export good, country 7 will have to increase its demand for it by more than country 1's reduction in demand. This rise will result in a relative increase in world demand for commodity 2 and hence in an improvement in country 2's terms of trade (and the exchange rate). Thus, when capital movements are exogenous and the exchange rate is endogenous in the balance of payments adjustment process — as is the case in a flexible exchange rate regime — relative prices and exchange rates *can* be very important.

Relative prices and exchange rates *need not* be important in the adjustment process however. This conclusion follows from the type of reasoning that goes back to King ([35], pp. 85-6 and Bastable [2] for the case in which all goods are tradable and from a result of Chipman [9], pp. 58-9; [12], p. 946) for the more general case. If two countries each produce three commodities with two factors of production, one of these commodities being a nontradable in each country and the other two tradables, and if the production functions are identical and

homogeneous and citizens' preferences identical and homothetic between countries, and if factor rentals are initially equalized between countries, then it follows that a transfer will leave all relative prices unaffected. This would be a case in which a pure purchasing power parity theory would be valid Cassel [8].

Even in this kind of a model, temporary changes in relative prices might be needed to facilitate movement of resources between sectors of tradables and nontradables, so one could expect a transfer to result in a temporary rise in the receiving country in the price of nontradables relative to tradables (which could be brought about by an appreciation of the exchange rate).

What does the empirical evidence show? There has been extraordinarily little empirical work on this question since the time of Taussig [55] and his followers. Graham [20] found that capital movements between Britain and the United States during the 1862-1879 period confirmed the Taussigian theory that prices of nontradables would rise relative to those of tradables in the receiving country and fall in the paying country and that the terms of trade would tend to change in accordance with the orthodox Millian presumption. Viner [57] found confirmation of the Taussigian theory for Canada during the 1900-1913 period. Wilson [58] found significant movements not so much in the terms of trade as in the relative prices of tradables and nontradables in response to capital inflows into Australia during 1871 to 1930. In recent times, I am aware only of my own study Chipman [11] of capital movements into and out of West Germany (1958 to 1979) and Sweden (1971 to 1979); the conclusion was that capital movements had no detectable effects whatsoever on relative prices in these countries.

2. - The Absorption Approach

The leading alternative approach to establishing the effect of a currency depreciation on the balance of trade is that pioneered by Polak [47] and Alexander [1], who perceived that the foreign balance is equivalent to the difference between total income and total expen-

diture ("absorption" in Alexander's terminology (15). I shall examine three applications of this approach.

2.1 - *Devaluation under Conditions of Keynesian Unemployment*

Analysis of the case of devaluation under conditions of Keynesian unemployment originated with Robinson [49] (who treated it in terms of the elasticity approach) and was formulated in a precise manner by Harberger [26]. The following is my own interpretation of the mechanism of adjustment.

There is initially a state of Keynesian underemployment equilibrium in which the nominal wage rate is above the market-clearing level. In order for this situation not to result in the unemployment of all labor, we assume that there is an additional factor (capital) so that labor is employed up to the point at which its nominal wage equals its marginal value productivity. It is also assumed that there may be production of import-competing goods; hence the exchange rate is not proportional to the terms of trade. A currency depreciation, made possible by an increase in the money supply used to purchase foreign currency, causes all domestic prices except the wage rate to rise; thus, it is equivalent to a cut in the nominal wage rate. Since the real wage rate falls, employment increases. The real income of previously employed workers falls, but that of the newly employed workers, as well as that of the capitalists, rises. If workers and capitalists have identical homothetic preferences, we may suppose that there is a rise in potential welfare (as measured by a community utility function). If all income is spent, then, as Harberger showed, there is no improvement in the trade balance; however, if part of the increase is saved, then aggregate expenditure (absorption) rises less than income. In the latter case, the excess saving presumably causes the world real interest rate to fall, and hence the foreign country is induced to borrow and cut its spending (and the home country to save less) until an equilibrium is reached in which the foreign country has lower

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(15) This terminlogy originated with BOULDING ([6], p. 402; [7], p. 231) and was apparently first used in the theory of international trade by KINDLEBERGER (1950, p. 180).

income and employment and hence lower saving and thus a lower trade balance to match the home country's increased trade balance. To the extent that the resulting capital outflow worsens the home country's terms of trade, real income rises less than initially, and, if the presumption of Laursen and Metzler ([37], p. 286) is correct (16), the propensity to save out of a given income will fall; hence, in the final equilibrium, the net increase in saving and thus the net improvement in the foreign balance resulting from the devaluation may be quite small.

With the story told this way, one can see that the primary way an exchange depreciation brings about an improvement in the foreign balance is by causing a capital outflow, that is by increasing the rate of saving and inducing (via the interest rate) the foreign country to increase its rate of borrowing by a corresponding amount. That is, the mechanism operates through the capital account, rather than the current account.

This explanation is contrary to the usual view, according to which the mechanism operates through the current account. In this latter view, the mechanism works as follows Robinson [48]. The devaluation leads in the first instance to higher domestic prices of tradables. The result is increased employment in export and import-competing industries and therefore increased output of exportables and importables, which must be balanced against increased domestic consumption of both. Since consumption rises less than income, the result is an improvement in the scheduled balance of trade, which may be effectuated by temporarily lower foreign prices of both export goods and import-competing goods. Since the foreign country thus suffers a temporary worsening of its balance of trade, it experiences a decline in employment and income and therefore a decrease in saving to offset the increase in the home country's saving; this makes the temporary deterioration of its trade balance permanent (17). In this

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(16) For an intertemporal analysis of this effect, see SVENSSON and RAZIN [54].

(17) At this point it is worth observing that there appears to be an error in Robinson's analysis. She states, that "An increase in the balance of trade of one country at best leaves the level of employment for the world unaffected". This, statement overlooks the fact that the multiplier effect in the country that initiates the depreciation is necessarily greater by the amount of the initial increase in net foreign investment,

version of the story atthough the effect of the depreciation is transmitted through the current account, the essential part of the adjustment mechanism is not relative prices (except possibly the temporary initial fall in the foreign-currency prices of the home country's exportables *and* importables relative to those of the foreign country) or the terms of trade (which need not change at all) but the changes in employment and income that equilibrate the two countries' net rates of saving. Although relative prices change, they *follow* rather than precede, the improvement in the balance of trade.) Thus, income takes the place of the interest rate in bringing about equilibrium in the world capital market. But it is still crucial that there be a mechanism to bring about equilibrium in the capital market.

In the first of these two versions of the adjustment process, the causality runs from devaluation to increased saving to a reduced interest rate to a reverse transfer and thence (possibly but not necessarily) to a change in relative prices, including perhaps the terms of trade; the transmission of the effect from one country to the other goes through the capital account. In the second version, the causality runs from devaluation to a temporary improvement in the balance of trade accompanied by increased employment and income in the devaluing country and decreased income and employment in the foreign country; because — and only because — these income effects increase saving in the devaluing country and reduce it in the foreign country, the temporary changes in the balance of trade become permanent. In neither case is there a need for permanent changes in relative prices; changes in equilibrium relative prices may or may not take place, but they are irrelevant to the mechanism. What is essential is that either the interest rate or income (or both) bring about equilibrium in the capital market.

Both versions of the mechanism go contrary to the usual theory, which posits a causal relationship from devaluation to a change in

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than that in the country that responds to the induced change in the balance of trade. Where this not the case, it would follow that the world, by allowing wages to fall to market-clearing level, could not move from unemployment to full employment. Thus, as far as competitive depreciation is concerned, Robinson appears to have been mistaken in concluding that the game of beggar-my-neighbor necessarily leads to a shrinkage of world trade and economic activity. The same holds for the argument given in LERNER ([38], pp. 386-7).

relative prices (as between different commodities) to an improvement in the balance of trade. Rather, the causality runs from devaluation to improvement in the balance of trade to changes in relative prices. And an essential part of the story is that wages were initially above market-clearing levels. Should workers respond by pushing their money wages up to the previous level of the real wage, then, of course, the entire mechanism will break down.

2.2 *The Portfolio-Balance Approach*

According to what can be called the portfolio-balance approach (Alexander [1]; Negishi [46]; Kemp [31]; Dornbusch [16]), a currency depreciation will, because of its inflationary effect, reduce the real value of cash balances in the depreciating country, inducing the public to increase its hoarding temporarily in order to build cash balances back up to their previous level in relation to income. Dornbusch ([15], p. 906) assumed that the foreign country simultaneously deflates; hence its real cash balances will rise and the public will dishoard temporarily to reduce them. Under these circumstances, there will be equal and opposite differences between absorption and income in the two countries.

It could be said that is this case the currency depreciation operates directly on the current account to effect a temporary transfer from the devaluing to the foreign country, and that no change in relative prices need take place. Yet, there appears to be no reason to assume such symmetry; although the devaluing country must increase its money supply, the foreign country does not have to reduce its money supply. What we have here is the same type of problem as in the previous subsection: the temporary hoarding in the devaluing country must somehow induce equal temporary dishoarding in the other country. As in the previous case, we can imagine two mechanisms, one operating through the capital account and the other through the current account. In the first, individuals in the devaluing country desiring to build up their cash balances sell assets abroad, lowering their prices and increasing interest rates, thus calling forth the requisite cash from abroad (at the existing new pegged exchange rate). In the second these individuals instead sell goods and services

abroad, which requires a temporary fall in their prices (Alexander [13]). Note, however, that although changes in relative commodity prices are involved in the second of these two mechanisms, they are not induced by the depreciation itself but rather by the portfolio adjustment necessitated by the depreciation. In either case, the correct causal sequence is not from depreciation directly to a fall in export prices followed by an increase in exports and an improvement in the foreign balance but from depreciation to an increased supply of exports that is then followed by the sequence described. The distinction may seem minor, but it is important for clearly understanding the process. One must add that the first of the two mechanisms is certainly more plausible, since the problem is one of portfolio balance (18).

It needs to be emphasized that the mechanisms just described are purely temporary; the adjustments might all take place within one month or less. Thus, this approach cannot readily be used to justify the expectation of a currency depreciation's sustained effect on the balance of trade.

2.3 *The Fiscal Approach*

The approach pioneered by Polak [47] stresses not only a depreciation's direct effects (via inflation) on the budget deficit but also its

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(18) It is of interest, therefore, to inquire why the conventional procedure in the literature has been to limit attention to the second type of mechanism. ALEXANDER ([1], p. 271) stated, "Capital movements are ruled out here; if they were allowed they might change or eliminate the cash balance effect". MACHLUP ([41], p. 263) echoed this by saying: «The offer of assets and debt securities at reduced prices would attract foreign buyers — which would greatly help matters — but we have excluded any autonomous [*sic*] capital movements from our analysis. With foreigners ruled out as buyers — because we wish to abstract from capital inflows in order to concentrate on the trade balance — and with banks ruled out as buyers — because we have excluded additional credit creation — there are only nonbank residents left as buyers. The increased interest rates will have the effect of cutting down investment expenditures of business and consumption expenditures of households».

Here we see that both Alexander and Machlup went to extreme lengths to rule out a priori the most likely empirical outcomes of a depreciation since they would be inconsistent with the theory (both the elasticity approach and the absorption approach!), which insists that the effects of a depreciation can be transmitted only through the current account. This serves to confirm the main thesis of this paper, which is that in most cases, the only way a depreciation can affect the trade balance is by giving rise to capital movements.

effect on the propensity to save, an effect brought about by the redistribution of income. Inflation, according to this analysis, will redistribute income from low-saving workers and rentiers to high-saving entrepreneurs and thus tend to increase the rate of saving. (Polak admitted that it might also raise the rate of investment.) As far as the budget deficit is concerned, "bracket creep" would obviously increase revenues. For this effect to succeed in producing a sustained improvement in the trade balance, however, it must, of course, be assumed that successive devaluations always keep ahead of measures to rectify income distribution or reform the tax laws.

This approach also reveals an important effect on government expenditures, one that appears to have first been noted by Corden ([14], p. 12). Take two countries — say, the United States and a nondollar trading partner. If the nondollar country has a government budget deficit that is used at least in part to finance social welfare expenditures (denominated in the national currency), then a currency depreciation, accompanied by the increase in the money supply necessary to purchase and bid up the price of dollars, will lower the dollar value of these expenditures and thus of the budget deficit, it will, therefore, improve the balance of trade reckoned in dollars. Since the depreciation will cause domestic inflation, it will lower the real value of the domestic social welfare payments, and it is thus equivalent to a nominal cut in these benefits. This route is a way to achieve a sustained improvement in the balance of trade, provided the recipients of the welfare payments do not exert political pressure to restore the real value of their benefits. The United States cannot, of course, lower the dollar value of its trade deficit via this route of currency depreciation; nevertheless, to the extent that welfare benefits are not indexed, it constitutes a way to lower their real value and is equivalent to a nominal cut in government expenditures. It will lead to an improvement in the balance of trade but only as measured in foreign currencies.

Although a depreciation cannot reduce the burden of external debt for other countries, it can be an efficacious means for the United States to do so. Here again, the mechanism goes from currency depreciation to a decrease in the difference between absorption and income and thus to a reverse transfer and *only then* (if at all) to a

change in relative prices. But a depreciation will produce these results only when it is inflationary. if the dollar is bid up or down by speculators, there is no reason to expect the difference betweem income and absorption ("real hoarding" in Alexander's terminology) and therefore in the foreign balance to be affected in one direction more than another. On the other hand, if the dollar is pushed down by the deliberate actions of the monetary authorities, the depreciation will require an increase in the money supply; the above results can then be expected to follow. But this shows that it is very misleading to attribute the improved foreign balance to depreciation; it is simply the consequence of inflation. Those who advocate a deliberate policy of depreciation implicitly advocate inflation; it is obviously safer politically to advocate the former than the latter (even though the policies are equivalent), especially since there is so much confusion (even among economists) about the manner in which the exchange rate affects the foreign balance.

In none of the three cases that we have considered does a depreciation operate directly on relative prices, which in turn affect the trade balance. In fact, it is only in rare cases, which usually involve the existence of substantial unemployment, that the mechanism operates through the current account at all. In the vast majority of cases, it operates through the capital account and thus gives rise to the classical transfer problem. Changes in relative prices, to the extent that they are involved in the process, are a *consequence* of the transfer induced by the depreciation, not a cause of it.

3. - Empirical Evidence

It is time to look at the empirical evidence from the last 25 years. Table 1 below furnishes data on three series, covering the years 1960 to 1987, taken from a recent paper by Klein [36] — himself a proponent of the thesis that a currency depreciation will improve the trade balance. The first two series are the US balance of payments on current account and the US federal budget balance. The third is a series on US "price competitiveness", which is defined as the ratio of world to US export unit values, it is, in other words, the reciprocal of what is commonly called the «real exchange rate».

TABLE 1

US TRADE AND BUDGET BALANCES AND PRICE COMPETITIVENESS
1960-1987
(Billions of current US dollars)

	Balance of payments on current account	Federal budget balance	Price competitiveness (*)
		(world exports/US exports 1980 = 100	
1960	2.83	0.25	89.8
1961	3.83	− 3.47	88.7
1962	3.38	− 7.23	88.9
1963	4.41	− 4.76	90.2
1964	6.81	− 5.92	90.3
1965	5.41	− 1.60	89.1
1966	3.03	− 3.79	88.5
1967	2.59	− 8.70	87.3
1968	0.59	− 15.18	85.2
1969	0.42	5.44	85.4
1970	2.32	− 11.88	84.8
1971	− 1.45	− 24.80	86.8
1972	− 5.78	− 17.37	92.1
1973	7.07	− 7.95	95.6
1974	1.92	− 10.88	93.2
1975	18.13	− 75.40	92.9
1976	4.17	− 56.60	89.6
1977	− 14.49	− 51.05	93.5
1978	− 15.49	− 44.18	98.6
1979	− 0.95	− 27.91	100.0
1980	− 1.84	− 76.18	100.0
1981	6.87	− 78.74	88.1
1982	− 8.64	−125.69	84.0
1983	− 46.28	−202.53	80.5
1984	−107.09	−178.26	77.4
1985	−116.43	−212.11	77.7
1986	−141.46	−212.60	88.3
1987	−160.67	−156.00	86.2

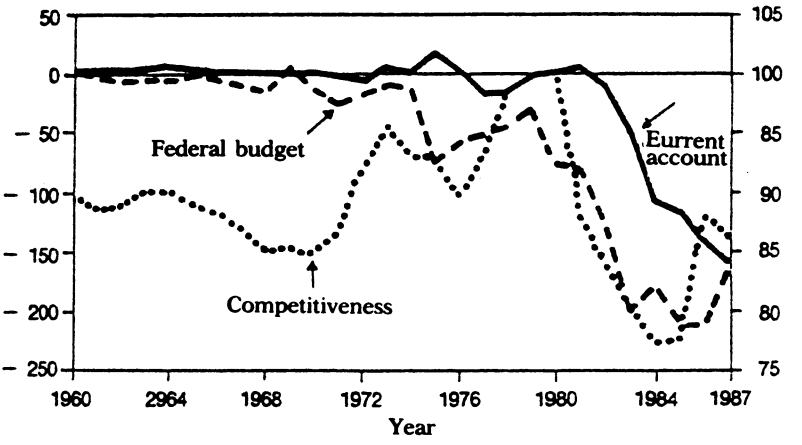
(*) The ratio of world to US export unit values, both expressed relative to 1980 values, multiplied by 100. "World" value is a weighted average of the export unit values of the export unit values of the major industrial countiries, including the United States, converted to US dollars at current exchange rates.

Source: KLEIN [36]. The data on export unit values for industrial countries and for the United States are given on p. 310; from them, I computed the series in column 3.

The three series are plotted in Graph 3. A noteworthy feature of the chart is the strong association between the current account balance and the index of price competitiveness during the 1980-1985 period. Many writers have used this association to support the

GRAPH 3

US TRADE AND BUDGET BALANCES
AND PRICE COMPETITIVENESS, 1960-1987 (*)



(*) Data for budget and current account are platted against left-hand scale; data for price competitiveness index are plotted against right-hand scale.
Source: Table 1.

hypothesis that a currency depreciation will improve the balance of trade. Thus, Klein ([36], p. 310) states: «During the 1980s . . . our competitiveness fell markedly, and the trade gap widened». A much stronger causal inference is drawn by Feldstein ([18], p. 796): «The primary reason for the deteriorating trade imbalance is the 70% rise of the dollar that occurred between 1980 and the spring of 1985. This unprecedented increase in the exchange value of the dollar dramatically increased the price of American products relative to foreign products, causing the volume of US exports to decline while merchandise imports increased by nearly 50%».

Likewise, Summers ([53], p. 427) states: «The dollar was extremely strong through 1985, rising by about 60% between 1981 and 1985. This led to the large trade and current account deficits that we are still suffering».

These inferences have been used to draw prescriptive conclusions. Thus, Feldstein ([18], p. 800) states: «The dollar must ...

continue to decline and the cumulative fall below its current level must be substantial. — Again — Sooner or later it will ... be necessary to recognize that the real value of the dollar must fall further to shrink the US trade deficit to a level that can be financed by private capital inflows. ... So the dollar must fall in real terms — that is, by more than the inflation differential — to bring the trade back toward balance and to shrink the current-account deficit to a financeable level». And according to Bergsten [4]: «A number of studies show that another 10% to 15% decline in the average value of the dollar, with domestic demand abroad continuing to grow at current rates and US domestic demand growing more slowing [*sic*], would reduce the US deficit to a sustainable level».

A look at Graph 3 shows, however, that the close association between the index of price competitiveness and the current-account balance did not continue beyond 1985; on the contrary, the relationship was reversed. And the 1960-1978 period saw very substantial variations in price competitiveness while the current account hardly changed.

Various special reasons have been given for the lack of a positive correlation since 1985. Klein ([36], p. 310) remarks: «The new element in the situation is that the United States is a net debtor nation; our interest payments to foreigners for debt service are very large. this means that we cannot rely on competitiveness in financial capital services, as before; this is one reason why dollar depreciation is less potent». Feldstein ([18], p. 800-1) provides a similar explanation of why the US dollar must fall all the more in order to reduce the trade deficit».

Other authors invoke lags; thus, Bergsten ([3], p. 774) states: «It normally takes 12 to 18 months for currency changes to produce improvements in recorded trade balances, and the lag could be even longer this time because the dollar was so overvalued at its peak that foreign firms built enormous profit margins and did not have to raise their prices for some time». Do the data support this view?

Graph 3 lends some support to Bergsten's observation for the 1980-1985 period, but it provides no confirmation for the turning point in the index of competitiveness after 1985. On the other hand, for this period there is a close association between the index of

competitiveness and the federal budget, which would be in conformity with the hypothesis that the latter is the exogenous variable and the former (or the real exchange rate) the endogenous variable. What is especially noteworthy about the chart is the high correlation displayed between the federal budget and the current-account balance.

If lags are ignored, a simple regression of the current-account balance, P_t, against the budget balance, B_t, and the index of competitiveness C_t yields the fitted equation:

$$\begin{array}{lccc} P_t = & -43.497 + 0.5356\,B_t + 0.6163\,C_t + e_t & (R^2 = 0.684) \\ & (-0.4303) \quad (6.115) \quad (0.558) & \end{array}$$

where the numbers in parentheses are the t ratios. This results in the budget deficit's supplying the overwhelming explanation for the trade deficit, the real exchange rate being statistically insignificant.

If lags are introduced, some weight is given to competitiveness. A linear regression with three lags for each of the independent variables yields the fitted equation

$$\begin{array}{lllll} P_t = -260.6 - & 0.0366B_t + & 0.2954B_{t-1} + & 0.2222B_{t-2} + & 0.1784B_{t-3} \\ (-6.587) & (-0.464) & (3.698) & (2.788) & (1.933) \\ +0.7748C_t - & 0.0858C_{t-1} + & 0.8749C_{t-2} + & 1.3059C_{t-3} + & e_t \\ (1.683) & (-0.124) & (1.036) & (1.981) & \end{array}$$

with an R^2 of 0.979. The F statistic for the joint significance of the four budget coefficients is 140.32, which (with 4 and 26 degrees of freedom) is highly significant even at the level 10^{-16} (the inverse F distribution having the value 127.39 at $1 - 10^{-16}$). The F statistic for the joint significance of the four competitiveness coefficients is 14.72, one-tenth as great; however, it is still statistically significant at the level 0000021, though none of the individual coefficients i significant at the 5% level.

The real test is or will be whether, now that four years have elapsed since US competitiveness started to improve dramatically, the current-account balance will begin to show substantial improvement.

There must come a time when, instead of giving special reasons for why this has not happened while the federal deficit has remained large, analysts must surely recognized that there is something wanting in the theory that what is needed is an improvement in competitiveness (a fall in the exchange rate), rather than a reduction in the budget deficit.

BIBLIOGRAPHY

[1] ALEXANDER SIDNEY S.: «Effects of a Devaluation on a Trade Balance», *International Monetary Fund Staff Papers*, n. 2, April 1952, pp. 263-78.

[2] BASTABLE C.F.: «On Some Applications of the Theory of International Trade», *Quarterly Journal of Economics* n. 4, October 1989, pp. 1-17.

[3] BERGSTEN C. FRED: «Economic Imbalances and World Politics», *Fereign Affairs*, n. 65, 1987, pp. 770-94.

[4] – . –: «The G-7 Should Drive the Dollar Down», *Wall Street Journal*, n. 15, May 1989.

[5] BLACKHURST R.: «The Relation Between the Current Account and the Exchange Rate: A Survey of the Recent Literature», in DE GRAUWE P. - PEETERS T. (eds.): *Exchange Rates in Multicountry Econometric Models*, London, MacMillan, 1983, pp. 58-99.

[6] BOULDING KENNETH E.: *Economic Analysis*, 2nd ed., New York, Harper & Row, 1948.

[7] – . –: *A Reconstruction of Economics*, New York, John Wiley & Sons, 1950.

[8] CASSEL G.: «The International Movements of Capital», in CASSEL G. *et* AL.: *Foreign Investments*, Chicago, University of Chicago Press, 1928, pp. 3-93.

[9] CHIPMAN JOHN S.: «The Transfer Problem Once Again», in HORWICH G. - SAMUELSON P. (eds.): *Trade, Stability, and Macroeconomics*, New York, Academic Press, 1974, pp. 19-78.

[10] – . –: «A Reconsideration of the 'Elasticity Approach' to Balance-of-Payments Adjustment Problems», in DREYER S. (ed.): *Breadth and Depth in Economics*, Lexington (Mass.), Heath, 1978, pp. 49-85.

[11] – . –: «Relative Prices, Capital Movements, and Sectoral Technical Change Theory and an Empirical Test», in JUNGENFELT K. - HAQUE D.: *Structural Adjustment in Developed Open Economies*, London, MacMillan Press, 1985, pp. 396-454.

[12] – . –: «International Trade», in EATWELL J. - MILGATE M. - NEWMAN P. (eds.): *The New Palgrave: A Dictionry of Economics*, vol. 2, New York, Stockton Press, 1987, pp. 922-55.

[13] – . –: «The Classical Transfer Problem and the Theory of Foreign Exchanges», in FEIVEL G.R. (ed.): *Joan Robinson and Modern Economics*, New York University Press, 1989, pp. 739-73.

[14] CORDEN W.M.: *Inflation, Exchange Rates, and the World Economy*, Oxford, Clarendon Press, 1977.

[15] DORNBUSCH R.: «Currency Depreciation, Hoarding, and Relative Prices», *Journal of Political Economy*, n. 81, August 1973, pp. 893-915.

[16] – . – : «Alternative Price Stabilization Rules and the Effects of Exchange Rate Changes», *Manchester School of Economic and Social Sciences*, n. 43, September 1975, pp. 275-92.

[17] – . –: *Open Economy Macroeconomics*, New York, Basic Books, 1980.

[18] FELDSTEIN M.: «Correcting the Trade Deficit», *Foreign Affairs*, n. 65, Spring 1987, pp. 795-806.

[19] – . –: «Redefining Dollar Stability», *Wall Street Journal*, n. 19, September 1988.

[20] GRAHAM F.D.: «International Trade under Depreciated Paper: The United States, 1862-79», *Quarterly Journal of Economics*, n. 36, February 1922, pp. 220-73.

[21] HABERLER G.: «Some Comments on Professor Hansen's Note», *Review of Economic Statistic*, n. 26, November 1944, pp. 191-93.

[22] – . –: «Currency Depreciation and the International Monetary Fund», in HARRIS S.E. (ed.): *Foreign Economic Policy for the United States*, Cambridge (Mass.), Harvard University Press, 1948, pp. 384-96.

[23] – . –: «Dollar Shortage?», in HARRIS S.E. (ed.): *Foreign Economic Policy for the United States*, Cambridge (Mass.), Harvard University Press, 1948, pp. 426-45.

[24] – . –: «The Market for Foreign Exchange and the Stability of the Balance of Payments», *Kyklos*, n. 3, 1949, pp. 193-218.

[25] HANSEN A.: «A Brief Note on 'Fundamental Disequilibrium'», *Review of Economics and Statistics*, n. 26, November 1944, pp. 182-84.

[26] HARBERGER A.C.: «Currency Depreciation, Income, and the Balance of Trade», *Journal of Political Economy*, n. 58, February, 1950, pp. 47-60.

[27 HIRSCHMAN A.O.: «Devaluation and the Trade Balance: A Note», *Review of Economics and Statistics*, n. 31, February 1949, pp. 50-3.

[28] HUME D.: «Of the Balance of Trade», in HUME D.: *Political Discourses*, Edinburgh, A. Kinkaid and A. Donaldson, 1752, pp. 79-100.

[29] JOHNSON H.G.: «Towards a General Theory of the Balance of Payments», in JOHNSON H.G.: *International Trade and Economic Growth*, London, Allen & Unwin, 1958, pp. 153-68.

[30] KEMP M.C.: «The Exchange Rate, the Terms of Trade and the Balance of Payments in Full Employed Economies», *International Economic Review*, n. 3, September 1962, pp. 314-27.

[31] – . –: «The Balance of Payments and the Terms of Trade in Relation to Financial Controls», *Review of Economic Studies*, n. 37, January 1970, pp. 25-31.

[32] KEYNES J.M.: «The German Transfer Problem», *Economic Journal*, n. 39, March 1970, pp. 1-7.

[33] – –: «A Rejoinder», *Economic Journal*, n. 39, June, 1929, pp. 179-82; «A Reply», *Economic Journal*, n. 39, September 1929, pp. 404-80.

[34] KEYNES JOHN M.: A Treatise on Money, 2 voll., London, MacMillan, 1930.

[35] KING P.: *Thoughts on the Effects of the Bank Restrictions*, 2nd ed., London, Cadwell and Davies, 1804.

[36] KLEIN L.R.: «Components of Competitiveness», *Science*, n. 241, July 1988, pp. 308-13.

[37] LAURSEN S. - METZLER L.A.: «Flexible Exchange Rates and the Theory of Employment», *Review of Economics and Statistics*, n. 32, November 1950, pp. 281-99.

[38] LERNER ABBA P.: *The Economics of Control*, New York, MacMillan, 1944.

[39] MACHLUP F.: «The Theory of Foreign Exchanges», Parts 1 and 2, *Economica*, n. 6, November 1939, pp. 375-97; n. 7, February 1940, pp. 23-49.

[40] – . –: «Elasticity Pessimism in International Trade», *Economia Internazionale*, n. 3, February 1950, pp. 118-37.

[41] – . –: «Relative Prices and Aggregate Spending in the Analysis of Devaluation», *American Economic Review*, n. 45, June 1955, pp. 255-78.

[42] – . –: *Involuntary Foreign Lending*, Stockholm, Almqvist & Wiksell, 1965.

[43] MARSHALL A.: *Money Credit and Commerce*, London, MacMillan, 1923.

[44] MILL J.S.: *Principles of Political Economy*, 2 voll., London, Parker J.W., 1848.

[45] MUNDELL R.A.: «The International Disequilibrium System», *Kyklos*, vol. 14, n. 2, 1961, pp. 153-72.

[46] NEGISHI T.: «Approaches to the Analysis of Devaluation», *International Economic Review*, n. 9, June 1968, pp. 218-27.

[47] POLAK J.J.: «Depreciation To Meet a Situation of Overinvestment», International Monetary Fund, Research Department, *Rappoto RD-707*, September 10, 1948.

[48] ROBINSON J: «Beggar-My-Neighbour Remedies for Unemployment», in ROBINSON J.: *Essays in the Theory of Employment*, New York, MacMillan, 1937, pp. 210-28.

[49] – . –: «The Foreign Exchanges», in ROBINSON: *Essays in the Theory of Employment*, New York, MacMillan, 1937, pp. 183-209.

[50] – . –: «The Pure Theory of International Trade», *Review of Economic Studies*, vol. 14, n. 2, 1947, pp. 98-112.

[51] SAMUELSON P.A.: «The Transfer Problem and Transport Costs: The Terms of Trade when Impediments are Absent», *Economic Journal*, n. 62, June 1952, pp. 278-304.

[52] SOHMEN E.: «The Effect of Devaluation on the Price Level», *Quarterly Journal of Economics*, n. 72, May 1958, pp. 273-83.

[53] SUMMERS H.A.: «Tax Policy and International Competitiveness», in SPENCE A.M. - HAZARD H.A. (eds.): *International Competitiveness*, Cambridge (Mass.), Ballinger, 1988, pp. 399-430.

[54] SVENSSON LARS E.O. - RAZIN ASSAF: «The Terms of Trade and the Current Account: The Harberger-Laursen-Metzler Effect», *Journal of Political Economy* n. 91, February 1983, pp. 97-125.

[55] TAUSSIG F.W.: «International Trade under Depreciated Paper. A Contribution to Theory», *Quarterly Journal of Economics*, n. 31, May, 1917, pp. 380-403.

[56] – . –: *International Trade*, New York, MacMillan Press, 1927.

[57] VINER J.: *Canada Balance of International Indebtedness, 1900-1913*, Cambridge (Mass.), Harvard University Press, 1924.

[58] WILSON R.: *Capital Imports and the Terms of Trade*, Melbourne, Melbourne University Press with MacMillan, 1931.

Fiscal Stimulus and Employment at Home and Abroad in a Real Two-Country Customer-Market Model (*)

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In what can be called the monetary approach to unemployment fluctuation, even real shocks — of demand and of supply — depend for their effect on a monetary mechanism: the interest elasticity of the demand for money and the laggard or wayward behaviour of money wages or money prices. That approach has proved a durable part of Keynes' legacy, accepted in most monetarist, new classical, and neo-Keynesian models, and it is so well assimilated into the thinking of practicioners that it is hardly ever explicit in their discussions. This theoretical slant has given powerful support to the thesis that fiscal stimulus in a country expands employment at least in the near term, with much of that expansionary effect spilling overseas if the economy is open and finance internationally mobile (1). Econometric analyses have tended to confirm such expansionary effects over a one- or two-year horizon. But empirical research has not yet spoken clearly about the medium- and longer-term effects of consumer and government stimuli to aggregate demand.

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(1) In a nutshell, using the *IS-LM* apparatus supplied by Hicks, the stimulus to the *IS* curve pulls up the nominal rate of interest, and this increase in the opportunity cost of holding idle balances fuels a rise in the velocity of money, driving up output and employment until the nominal wage and price level 5 are high enough to neutralize this effect.

Advise: the numbers in square brackets refer to the Bigliography in the Appendix.

A real theory of the business cycle that is neoclassical in character — more accurately, neo-classical — has been refined in this past decade. Robert Barro, Robert King, and Edward Prescott are some of the leaders of this school. Yet it is far from clear, at least to me, that this type of non-monetary theory can plausibly account for the peculiar features of the 1980s slump in much of the world or indeed for the depression of the 1930s (2). It is a serious shortcoming of that theory that its premises exclude the existence of involuntary unemployment in either of the two existing senses of that term (Keynes's meaning and the job-rationing notion). I am also inclined to regard as counterfactual its tenet that high real interest rates and high real wage rates are important mechanisms for high employment.

A contrasting line of non-monetary models, which I have taken to calling structuralist, seek to explain low-frequency employment fluctuations by appeal either to real wage rigidity, suitably generalized by the notion of an equilibrium real wage locus — a modernist surrogate for the supply curve — or to real wage stickiness resulting from the time needed for prevailing lifetime labour contracts to adjust completely to real shocks in the structure of costs, markups, or demand. In their infancy, this line of models did little more than point to the possible sources of shift in the marginal productivity schedule derived from an aggregate production function — F_N (K, N, T) in more or less familiar notation. Michael Bruno and Jeffrey Sachs were the pioneers in the exploration of this kind of theoretical setup.

A series of my recent papers Phelps [4], [5], [8], [9] seeks to re-examine the consequences of real aggregate demand shocks, such as increases of consumption demand induced by fiscal stimulus, from the point of view of the structuralist theory. Thus far, the results from closed-economy models uniformly show that fiscal stimulus is contractionary for employment in the short term. The reasoning is that the consequent shift of consumption demand serves only to drive up

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(2) In this theory, fiscal stimulus tends to expand employment by driving up the real interest rate, of which the labour supply is an increasing function. If the stimulus takes the form of a tax cut, an additional result is an increase of the after-tax wage rate, which may also increase the labour supply. If, instead, the stimulus takes the form of a balanced budget increase of government spending, the second effect clearly operates in the opposite direction.

real interest rates, not to elicit increased output from producers of consumer goods. In models with capital goods, the resulting fall in the real prices of the capital assets produced by the investment-goods-producing sector has a chilling effect on the willingness of its firms to produce them, causing an immediate drop of employment there and thus in aggregate employment. In customer-market models, the resulting fall of share prices encourages firms to attempt to raise their markups, and the implied fall in the real wage offered (when unchanged employment requires and unchanged real wage) actually contracts output and employment throughout the economy.

We can interpret this result as predicting contraction (relative to the initial reference path) over some medium term, an effect that would be visible to econometric analysis after the initially favourable monetary effects had been largely worked off by inflation or countervailing monetary policy. It is perhaps obvious that the long-run effect is also contractionary if the real wage does not make the full downward adjustment needed to restore the unemployment rate to the path it would otherwise have taken.

What are the implications of using structuralist models for a world of open economies linked by a perfect international financial market? This is the world inhabited by Fitoussi and Phelps [1], [2], but in keeping with the "real" nature of the present paper, let me first note the more recent non-monetary inhabitants. In a recent paper (Phelps [4]) on the small, open economy operating in a worldwide customer market, I showed that a country-specific increase of foreign demand — and hence an increase in the export demand for the output of the country's firms that leaves the world real interest rate undisturbed — is expansionary in the short term but less so in the long term. Yet in another paper (Phelps [6]) on a two-sector world without customer markets, I showed, echoing the Fitoussi-Phelps propositions, that an increase of world demand originating abroad and driving up the world real interest rate contracts employment in a small, open economy by reducing (or deferring) production in the investment-goods-producing sector. The simple interest-rate mechanism underlying this result — contraction at home from consumption stimulus abroad — can be presumed to produce the same result in a customer-market model. In a paper still in process (Phelps [9]), I find

conditions under which a small, open, customer-market economy suffers a contraction as a result of a rise in the world real interest rate. (We can deduce from the results of the closed-economy, customer-market model that if all the world's countries generate an increase of consumer demand, the result must be a rise of the world real interest rate and a worldwide decline of employment.)

This non-monetary modelling leaves a gap: what are the interactions between large countries or large aggregates of countries? If a positive shock to demand occurs in a part of the world that is large but substantially smaller than the whole world, what is the effect employment there and what is the effect the rest of the world where no internal, exogenous shift of demand has arisen? (3). I am especially interested in learning whether the results from a study of two-country models will parallel the Fitoussi-Phelps finding that the demand stimulus is *expansionary* in the country of origin but *contractionary* for the other country. The answer, I believe, is not implicit in the Fitoussi-Phelps models since it is not clear that their customer-market model (the first of their three models) or their two-sector model (their third model) will survive in some recognizable form once money and the short-run non-neutrality of money are removed. In particular, it is not obvious why increased consumption stimulus would be expansionary for the home country if there is no velocity of money to be increased and no nominal wages and prices behaving rigidly or stickily. Thus, I need the present paper, whether or not anyone else does!

Accordingly what I analyze here is a two-country extension of the closed-economy, customer-market model referred to above. After laying out the model, I discuss the near-term effects at home and abroad of fiscal stimulus in one of the countries. Then I examine the long-term or permanent effects.

Thus this paper can be seen as a report on the extent to which the Fitoussi-Phelps explanation of the slump in Europe is robust to the

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(3) The end of the previous paragraph describes the effect on a small, open economy of a consumption stimulus in the entire rest of the world. The effects, to repeat, are a *contraction* in the rest of the world (because it is essentially the world economy and, therefore, virtually a closed economy) and a contraction in the small economy.

exclusion of monetary mechanisms or, better, to the neutrality of money. This study is also an inevitable step in grasping the implications of the structuralist theory for the workings of the international economy (4).

1. - The Two-Country Customer-Market Model

The one-country, customer-market model is constructed from known building blocks, including the Phelps-Winter model of the firm operating in frictional competition in the product market. Recast in the notation to be used here, the one-country model reduces to a system of three equations in the price of shares, q, consumption per customer, c, and the real interest rate, r:

$$dq/dt = rq - [1 - u(c)],\ u'(c) > 0$$

$$dc/dt = c\{r - \varrho - m[(q + b)/c]\},\ m > 0,\ \varrho \geq 0$$

$$q = Q(c),\ Q'(c)c/Q(c) > 1$$

The first equation is a Fisherine differential equation determining the appreciation on the real value of shares as a function of interest and cash flow per customer, where u denotes real unit labour cost. Behind this equation is the premise of constant costs at the firm level and increasing costs at the industry level, owing to the positive slope of the equilibrium real wage employment rate locus derived from a Calvo-Bowles shirking model. The second equation, which arises from Blanchard-Yaari consumption dynamics, is a differential equation in consumption per customer involving the real value of the outstanding shares plus public debt per household (and thus per customer), $q + b$. The parameter m is composed of the time preference rate, ϱ, and the age-independent death rate. Finally, on the supply side there is a

(4) This paper ventures a more formal consideration of the dynamics of international competition than any that so far appeared, but the emphasis is on the main ideas rather than a rigorous statement of the model or a thorough analysis, and I hope it will be read in that spirit. For research purposes, one would have to study alongside it the 1970 Phelps-Winter paper and my 1988 and 1989 papers on a real customer-market model of the small, open economy.

timeless relationship between c and q that comes from the Phelps-Winter [10] static maximization of the firm at each moment of the appropriate Hamiltonian function; it involves the real shadow price of customers and current cash flow, but the shadow price can be treated as equal to the real price of shares (by keeping the number of shares equal to the number of customers). This equation gives the supply pice, or the required price of customers — equivalently, of shares, q — needed to induce firms to supply the expenditure per customer specified. A higher expenditure here entails higher employment and thus a higher real wage in the economy as a whole.

The three-equation system is reducible to a single differential equation in q, or equivalently in c, in which there are no state variables whose evolution would move q over time. It can be shown that, under the hypothesis of perfect foresight over the remaining future, q simply jumps at once to the steady state value corresponding to the given parameters.

1.1 *The Full Dynamic Model*

The two-country generalization is represented by the system of equations in table 1. Notice that country A and country B each have a subsystem. Together these subsystems contain eight equations, not six as one might have expected, because of two consequences of international competition. First, country A has nationals — equal in number to x_A — of whom x_{BA} are currently customers at firms in country B, leaving $x_{AA} = 1 - x_{BA}$ as customers of the home firms. As a result, there is a differential equation for consumption per customer abroad, c_{BA}, as well as one for consumption per customer at home, c_{AA}. The second consequence is that it is appropriate to distinguish between the values — q_{BA} and q_{AA} respectively — of the two types of customers, national and foreign, found in country B since they have different demands arising from their generally different real incomes. For clarity, it can be supposed that the firms in country B actually issue the two types of shares, impute the corresponding earnings on each correctly, and make stock dividends or buybacks so as to keep the number of shares of each type equal to the number of its customers of that type. That feature provides an explanation of why the interest

TABLE 1

THE PROPER TWO-COUNTRY GENERALIZATION

(1) $dq_{AA}/dt = (r_A - g_{AA})\, q_{AA} - \{1 - u_A\, [c_{AA}\, (x_A - x_{AA})]\}\, c_{AA}$

(2) $dc_{AA}/dt = (r_A - \varrho_A)\, c_{AA} - m_A \{[q_{AA}\, [x_A - x_{BA}) + + eq_{BA}x_{BA} + eq_{BB}s_{BBA}]\, (1/x_A) + b_A\}$

(3) $q_{AA} = Q^A\, [c_{AA'}\, c_{AA}\, (x_A - x_{BA}), e]$

(4a) $dq_{BA}/dt = (r_B - g_{BA})\, q_{BA} - \{1 - u_B\, [c_{BB}x_B + c_{BA}x_{BA}[\}\, c_{BA}$

(4b) $dq_{BB}/dt = (r_B - g_{BB})\, q_{BB} - \{1 - u_B\, [c_{BB}x_B + c_{BA}x_{BA}]\}\, c_{BB}$

(5a) $dc_{BA}/dt = (r_B - \varrho_A)\, c_{BA} - m_A \{[(1/e)\, q_{AA}\, (x_A - x_{BA}) + + q_{BA}x_{BA} + q_{BB}s_{BBA}]\, (1/x_A) + (1/e)\, b_A\}$

(5b) $dc_{BB}/dt = (r_B - \varrho_B)\, c_{BB} - m_B \{[q_{BB}\, (x_B - s_{BBA})]\, (1/x_B) + b_B\}$

(6) $(q_{BB}x_B + q_{BA}x_{BA})/(x_B + x_{BA}) = Q^B\, [(c_{BB}x_B + c_{BA}x_{BA})\, / / (x_B + x_{BA})\, c_{BB}x_B + c_{BA}x_{BA}'\, e)$

(7) $r_A = r_B + (de/dt)/e$

(8) $(dx_{BA}/dt)/x_{BA} = g_{BA}(e),\ g_{BA}\,(1) = 0,\ g_{BA'}\,(e) < 0$

(9) $ds_{BBA}/dt = [1 - u_B\, (c_{BB}x_B + c_{BA}x_{BA})]\, (x_{BA} + s_{BBA}) - c_{BA}x_{BA}$

rate in the equation for the valuation of each type of customer and the corresponding share (which is a claim to the income stream that the type of customer generates) appears net of the growth rate, g, of the stock of customers: if the stock is growig, share owners are receiving pro rata capital gains. Note finally that each firm in country B, being unable to distinguish and discriminate between the two types of customers, sets the same real price for both; thus the weighted

average amount supplied per total number of customers is functionally related to the weighted average share price.

In addition, the model has the familiar arbitrage equation in the two real interest rates, where e denotes the real exchange rate (American definition); the Phelps-Winter differential equation governing the motion of x_{BA}; and finally a differential equation governing the accumulation of shares in country B firms by wealth owners in country A. The portfolio preferences here follows a simple rule: the public debt of one's own country is the first choice, then shares of firms in one's own country, then shares corresponding to compatriot customers overseas, and last shares representing claims to the earnings from the domestic customers of the other country's firms. Country A is a net creditor country, and country B a net debtor, so A has wealth left over to hold some shares in B firms. Let s_{BBS} denote the number of domestic customers of B firms whose shares are held by nationals of A. We can suppose that, at the initial moment, s_{BBA} is positive, though perhaps small. It is clear that in steady states xBA is positive if and only if s_{BBA} is positive because ownership of the earnigs from country B's foreign customers would not suffice to pay their import bill (it would pay the profits but not the wages generated by sales to those customers).

As in the closed-economy model, a country's shares serve as the numéraire for measuring the money prices of goods and labour. The nominal exchange rate is then the amount of country A's money needed to buy one unit of country B's. Multiplying this rate by the nominal price level in B gives the price of goods supplied by B's firms in terms of A's money; then dividing by the nominal price of A goods in A's money gives the real exchange rate, which is denoted by e.

One other comment. A strength of the customer-market view of products markets, with its emphasis on incomplete information, is that it rationalizes two-way trade in the same product. But as modelled here, the battlefront between the firms of country A and those of country B is found in the territory of one camp or the other — A's territory in the present case (5). This asymmetry in market

(5) The motive for modeling in this function was simply to avoid adding to the number of state variables in the dynamic system, which has been held to two.

penetration is unattractive, but, I believe, it is not a critical drawback. One can assume, if one likes (and as I will in discussing the short run), that the initial attachment of A customers to B firms is arbitrarily small.

1.2 *A Simplified Version of the Two Country Model*

Although the model just described may be the theoretically appropriate way of extending to two countries the one-country model summarized earlier, a simplified version is more convenient for analyzing the near-term response of the system to shocks. The simplification is the elimination in country B of the two classes of stock corresponding to the division of foreign and domestic customers there. In country B there is now one class of shares, with price qB and growth rate gB, which is a claim to the average earnings per customer from the representative mixture of foreign and domestic customers. Table 2 gives this simplified model. I believe that the reader will find it sufficient to have a brief look at this system.

2. - Interest and Employment in the Near and Far Term

In this part of the paper, I analyze the determination of employment and interest in the model both in the near term and in the equilibrium steady state that is presumed to be approached in the far future.

2.1 *The Short Run Under Static Expectations*

If one adopts the hypothesis of perfect foresight over the future remaining after any shock that may have just occurred, the analytical task is to solve for the functions that show how the jumpy costate variables — gA, gB, e, and the rest — depend upon the henceforth time-independent parameters, such as bA, and the two state variables of the system, xB_A and sB_A. The results indicate how, under perfect foresight, the paths of qB and the other variables would jump with,

TABLE 2

THE SIMPLIFIED TWO-COUNTRY MODEL

(1) $dq_A/dt = [r_A - g_A(e)]\, q_A - \{1 - u_A\,[c_{AA}\,(x_A - x_{BA})]\}\, c_{AA}$

(2) $(dc_{AA}/dt)/_{cAA} = r_A - \varrho - m_A\,\{[q_A\,(x_A - x_{BA}) + eq_B s_{BA}]\,(1/x_A) + b_A\}\,(1/_{cAA})$

(3) $q_A = Q^A\,(c_{AA'}\, c_{AA}\,(x_A - x_{AB}), e), e),\ Q^A_1 > 0,\ Q^A_2 < 0,\ Q^A_3 < 0$

(4) $dq_B/dt = [r_B - g_A\,(e)]\, q_B - \{1 - u_B\,[c_{BB}x_B + c_{BA}x_{BA}]\}\,(c_{BB}x_B + c_{BA}x_{BA})/(x_B + x_{AB})$

(5b) $(dc_{BB}/dt)/c_{BB} = r_B - \varrho_B - m_B\,\{[q_B(x_B + x_{BA} - s_{BA})\,(1/x_B) + b_B]\,(1/c_{BB})\}$

(5a) $(dc_{BA}/dt)/c_{BA} = r_B - \varrho_A - m_A\,\{[(1/e)q_A\,(x'_A - x_{BA}) + q_B s_{BA}]\,(1/x_A) + (1/e)\,b_B]\,(1/c_{AB})\}$

(6) $q_B = Q_B\,[(c_{BB}x_B + c_{BA}x_{BA})\,/\,(x_B + x_{AB}),\ c_{BB}xB + c_{BA}x_{BA'}\ e),\ QB_1 > 0,\ QB_2 < 0,\ QB_3 > 0$

(7) $(r_A = r_B + (de/dt)/e$

(8) $dx_{BA}/dt = g_{BA}\,(e)x_{BA'}\ g_{BA}\,(1) = 0,\ g_{BA'}\,(e) < 0$

(9) $ds_{BA}/dt = \{1 - u_B\,[c_{BB}x_B + c_{BA}x_{BA}]\}\,[(c_{BB}x_B + c_{BA}x_{BA})/(x_B + x_{BA})]s_{BA} - c_{BA}\,x_{BA}$

where: $-g_A(e)\,(x_A - x_{BA}) = g_{BA}(e)x_{BA} = g_B\,(e)\,(x_B + {}_{BA})$.

say, a step increase in the parameter b_A, which we can interpret as a helicopter drop of public debt onto the citizenry by the government of country *A*. (I use "helicopter drop" as a stylized way of representing a burst of deficits rained down on the citizenry as the result of a temporary tax cut.) At this point, we take into account the effect on gB of the adjustment of x_{BA} and s_{BA} that is set in motion and implicitly

how the anticipation of that adjustment modifies the initial jump of qB. Unfortunately, the present model appears to be somewhat too dense in interrelationships to make it feasible to calculate these results within a reasonable period of time. In part as a compromise and in part because it may be that markets underestimate the speed with which prices will be driven by the adjustment of the state variables, I instead analyze the short-run effects of disturbances under the hypothesis of statistic expectations regarding e and the q in each country. In this short run, the customer stocks are taken as given.

Given the hypothesis of static expectations, the short-run behaviour of the simplified model reduces to the static model shown in table 3. The expected rate of change of the real exchange rate is always nil, so the real rate of interest in one country, which is defined in term of the goods supplies by the firms of that country, must equal the real interest rate in the other country to satisfy the arbitrage equation *(7)*. Thus, there is a common world real interest rate, r. The expected rates of change of the two share prices are likewise nil. Therefore, equation *(1)* and its counterpart *(4)* become static equations in the real interest rate-equations *(1')* and *(4')*. It can also be shown that if the expected rate of change of the real wage and of the

TABLE 3

THE SHORT RUN UNDER STATIC EXPECTATIONS

(1') $r' = [1 - u_A (c_{AA} x_{AA})] \, c_{AA}/Q_A (c_{AA}, e; x_{AA})\} + g_A(e)$

(2') $c_{AA}x_{AA} = x_{AA}m_A [Q^A (c_{AA}, e) + eQ^B (c_{BB}, c_{BA}, e) \, s_{BA}x_A^{-1} + + b_A]/(r - \varrho_A)$

(4') $r = \{[1 - u_B(c_{BB}x_B + c_{BA}x_{BA})] [(c_{BB}x_B + c_{BA}x_{BA} / (x_B + x_{BA})]/ / Q_B (c_{BB}, c_{BA}, e)\} + g_B (e)$

(5') $c_{BB}x_B + c_{BA}x_{BA} = x_B m_B [Q^B (c_{BB}, c_{BA}, e) (x_B - s_{BA})x_B^{-1} + + b_A] / (r - \varrho_A) + x_{BA}m_A [(1/e) Q^A (c_{AA}, e) + + Q_B (\cdot) \, s_{BA}x_A^{-1} + (1/e)b_A](r - \varrho_B)$

unemployment rate are nil, the resulting consumption function for each type of customer is identical to the steady state relationship obtained by setting the rate of change of consumption equal to zero in equations *(2)*, *(5a)* and *(5b)*; the result is equations *(2')* and *(5')*. (Note that it is not supposed that the expected growth rate of the customer stocks is *always* nil; it would contradict the logic of the model to assume that producers believed fate would freeze their customer stocks regardless of their actions.)

2.2 *The Short-Run System in IS-LM Space*

Equation *(1')* in the short-run system actually descends both from the static version of equation *(1)* and from equation *(3)*, which shows how the shadow price of customers required to elicit a specified output depends on the quantity of that output. Equation *(4')* is obtained in the corresponding way. In a recent paper on non-monetary *IS-LM*, I took similar equations as analogous to the *IS* equations in Hicks's *IS-LM* reduction of Keynes's theory. My reason for doing so was that equations such as *(1')* and *(4')* give the rate of interest that firms are willing to pay, as *IS* curves do. Yet there is an important sense in which these two equations play the role of the *LM* equations in the Hicksian system. In both cases, the equations describe the quantity of output or employment that the system — the monetary mechanism (in Hicks's case) or the customer-market mechanism (in my case) — will support at successively higher levels of the interest rate — the nominal interest rate (in Hicks's case) or the real rate (in my case). The striking thing about the equation in the case here, however, is that it is downward sloping in the output/interest-rate or (Z, r) plane, not upward sloping as the Hicks curve is. The explanation is that an increase of, say, Z_A increases the q_A required to induce firms to supply more output to their customers; since the supply of output is inelastic with respect to q, as indicated in the closed-economy model, a doubling of Z_A, even if it doubles profits in the numerator of the right-hand side of equation *(1')*, more than doubles q_A in the denominator and thus lowers the rate of return on the share price. On this account, r must fall. In addition, with an industry supply curve rising because of the higher real wage and

higher shirking at greater levels of employment, doubling output less than doubles the numerator. On this account as well, r_A must fall.

Consider now the other pair of equations in the short-run system. Equation *(2')*, to take first the simpler of the pair, gives the level of consumption expenditure on domestic product of country *A* as a function of r_A-ϱ_A and the wealth of domestic customers (who are all nationals). But here again, (3) is used to express wealth as a function of consumers' expenditures at the firms, so share wealth drops out. Now one can say — as my aforementioned *IS-LM* paper did — that this curve, and not *(1')*, is the true analogue of the *LM* curve since it gives the rate of interest that wealth owners require (to be more accurate, that they require if consumers are planning a consumption path that is flat to a good approximation). In an important sense however this equation and its counterpart for country *A* are analogous to Hicks's *IS* equations: they indicate how high the real interest rate must be to trim consumption demand for domestic product and hence to drop aggregate demand to the level that would be provided by the specified level of domestic production (after netting out the amounts of output to be purchased by the government and by firms, from which I have abstracted here). Furthermore, these equations will shift up with an increase of local public debt but the other pair will not. So one can equally well regard them as IS equations.

Which way do these latter two equations slope? If $m_A = 0$, so we are in the so-called Ricardian case, the corresponding interest rate — the rate read off the curve — is simply the rate of pure time preference, ϱ_B, so the curve is flat, meaning parallel to the output axis. Obviously, this paper rules out the Ricardian case.

For $m_A > 0$, equation *(2')* makes the rate of interest an increasing function of consumption expenditure and hence, of the level of output — provided that the level of public debt is not too far above zero. The reason is that, according to the Blanchard formula, the steady state interest rate is an increasing function of the wealth-consumption ratio, while the latter (more precisely, the ratio of real share wealth to consumption) is an *increasing* function of the level of consumption expenditure by virtue of the fact that according to equation *(3)*, the share price must rise more than proportionately with output to induce firms to supply increased output. Hence, the curve of equation *(2')*

has a positive slope, provided the debt is not too large (6). It is true that the case for an upward slope is somewhat weaker for country *B*, where some of the domestic shares are held by foreigners. Nothing is lost however, by admitting a downward slope, provided that the slope is not sharper than that of the companion curve corresponding to equation *(1')*.

Thus the system for the short run under static expectations, shown in table 3, consists of four equations in *e*, *r*, and the respective output levels in the two countries. To forestall (or terminate) confusion I will refer to equation *(1')* and *(4')* as the expected return equations, moving as an abbreviation, and to equations *(2')* and *(5')* as the required return, or *RR*, equations.

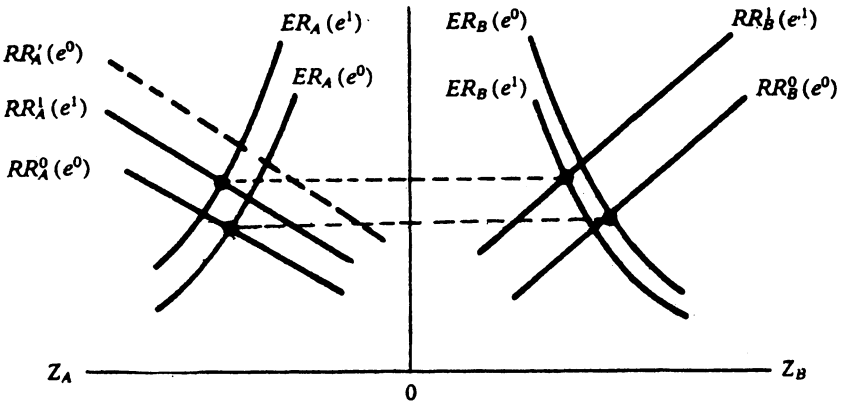
Figure 1 graphs the four equations of the short-run system in a pair of back-to-back diagrams in the interest-rate/employment plane — in *IS-LM* space. Robert Mundell [3] used the same apparatus in his two country Keynesian model, so this figure provides a clear view of the differences between the monetary approach explored by Mundell and the real approach taken here. The downward sloping curves ER_A and ER_B correspond to equations (1') and (4') respectively, and the upward sloping curves RR_A and RR_B refer to equations *(2')* and *(5')* respectively.

An alert reader will have noticed that country *A*'s *RR* curves make the interest rate depend on the other country's output level, Z_B, as well as its own through the supply-price effect of Z_B on the price of shares in *B* held by *A*'s nationals who are customers in their own country. Even in country *B*, where nationals do not hold foreign sharese, foreign customers hold such shares so the interest rate in *B* depends on foreign output, Z_A. To simplify the discussion and to avoid muddying the results of the analysis with effects that one can pressure to be small between large trading areas, I arbitrarily assume x_{BA} and

(6) The proposition that the required rate of return is increasing in output and hence output is in a sense increasing in the rate of interest may seem contradicted on its face since a glance at equation *(2')* suggests that a rise of *r* reduces the righthand side and thus reduces the left-hand side, which is output. This analysis overlooks the point that the required real shadow price of shares on the right-hand side is an increasing function of output with elasticity greater than one. As a result, if the public debt is small enough, the curve of the right-hand side when plotted as a function of output in a cross diagram slices through the 45 — degree line from below. So a rise of *r*, in shifting down that curve, actually shifts out its intersection with the 45 — degree line.

GRAPH 1

THE SHORT RUN



sB_A to be small. As a result, all the terms in total wealth that involve multiplication by e or $1/e$ are taken to be negligible. (The sole disadvantage of this procedure, as far as I can see, is that the effects of a fiscal stimulus cannot include an *initial* widening of the trade deficit of appreciable magnitude; such a widening will take time to develop.)

Nevertheless, the real exchange rate, e, is still a variable being held constant in the construction of any pair of *RR* curves since e figures in the supply-price functions Q^A and Q^B appearing in the underlying equations, *(2')* and *(5')*. Also, e affects the customer-stock growth rates figuring in the *ER* curves, so there too a shift of e will shift the curves.

The exchange rate is determined as follows. For a given e — at least, any e in the relevant range — we may assume there is an intersection of the two curves in the right-hand panel, the (r, Z_B) plane, and an intersection of the two curves in the left-hand panel, the (r, Z_A) plane. The solution value of the variable e is determined by the condition that it be at such a level as to make the intersections occur at the same value of r. (This is not the equilibrium exchange rate since expectations in that regard are fundamentally "off.") The effect of a change in the exchange rate on the intersections is analyzed below.

2.3 *The Effects of an Increase of Public Debt in Country* A

Let us now study the consequences of fiscal stimulus in country *A* for employment, consumption, and so on in both countries. Assume a helicopter drop of public debt rained down on the citizenry of A. Insofar as the model is applicable to the unemployment pattern that developed in the 1980s, one can identify country *A* as the United States and country *B* as Britain and the rest of Europe (7).

A step increase in *bA* affects only one curve, the *RRA* curve; a propagation mechanism is involved in the determination of the general equilibrium effects. The effect is an upward shift of that *RR* curve; hence there is a rise of the "required" interest rate in country *A* at the initial level of Z_A. With the ER_A curve unchanged the shift in the RR curve implies a rise in *A*'s interest rate if we take the exchange rate as given. A corollary that is paradoxical for Keynesian thinking is the corresponding negative impact on output in *A* (again given the exchange rate). This much is simply the result obtained from closed-economy models of the customer-market economy: the higher real interest rate discourages firms from investing so intensively in future customers, and the consequent jump of the desired markup has the side effect of contracting employment until the desired markup and the real wage associated with the prevailing employment level are again consistent.

For country *B* the increase in b_A does not produce a shift of the curves so there is no change of the interest rate there. Absent a change of *e*, the increase in *A* means a disparity between the interest rates in the two countries in favour of *A*. To restore interest rate parity, it is necessary to have a real depreciation of the exchange rate in *B* — that is, *e* must fall. Equivalently, there must be a real appreciation in *A*.

In the stripped-down, model the real appreciation in *A* operates through two mechanisms to correct the interest rate disparity. First, by reducing the competitiveness of *A* firms, the appreciation reduces

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(7) Of course, "the rest of Europe" has any number of honorary members, such as Australia and New Zealand, Canada, and some portions of Latin America and Africa. Some other countries of the world were predominantly influenced by other external shocks or internal forces and so do not fit the model well or fit it for different reasons.

the algebraic growth rate of the stock of customers in *A* — from zero if the world economy was initially in steady state equilibrium to some negative growth rate, as domestic customers began to drift overseas having located cheaper suppliers there. In country *B*, therefore, the effect of this real exchange rate response is a rise in the growth rate of the customer stock — from zero initially to some positive growth rate. On this account, *ERA* in Graph 1 shifts down, lowering the initially elevated interest rate in *A*, and *ERB* shifts up, raising the interest rate prevailing in *B*.

Second in view of the consequences of appreciation for competitiveness an appreciation in *A* can be assumed to reduce the markup that firms in that country require at a given output. Thus the output they are willing to supply at a given customer shadow price (and a given real wage) is increased; equivalently, the shadow price of customers, q_A, required to induce them to supply a given output (at a given real wage) is reduced (8). It follows that, with implied real wealth down at any given output level, the required real interest rate in country *A* at a given output level there is reduced; *RRA* shifts back down. Yet the implied decline of the share price tends to raise the expected return; on this account *RRA* shifts up. The latter shift by itself, exacerbates the interest rate disparity. We can assume however, that this effect is overcome by all the other effects, which operate in the other direction to lower the interest rate in *A*. A similar analysis applies to *B*, of course.

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(8) Theoretically, the real appreciation has two effects here, one of which actually operates to reduce the output supplied. When foreign suppliers and domestic suppliers were providing of units of the good for a dollar say, six days in the resort hotel or six scoops on the ice cream cone, a decision by domestic firms to go five days or five scoops for the same money represents a bigger percentage or relative worsening of competitiveness than if, as a result of the increased competitiveness of overseas suppliers, the foreign suppliers now supply seven days or seven scoops. Taken alone, this effect means that an increase in supply by foreign competitors induces a decreaseed in supply by domestic firms.

The other effect operates in the reverse direction, however. If depreciation abroad has improved the alternatives for customers of a domestic firm, it will respond by sweetening its offer (though not by so much as to nullify the decline of competitiveness). The greener the pastures elsewhere, the more slowly diminishing returns to sweetening a firm's terms set in. This effect, taken alone means that increased supply by foreign competitors induces domestic firms to emulate them by increasing their own supply.

The text assumes that, empirically, the latter effect outweighs the former effect.

Moreover, if country *A*'s nationals hold appreciable quantities of shares in country *B*'s firms, the real appreciation in *A* will have the additional effect of reducing the real wealth of *A*'s nationals who are customers in their own country; thus the appreciation will operate just like a decrease of b_A moderating the rise of the interest rate in *A*. Similarly, holdings by *B*'s nationals of shares in *A*'s firms will appreciate; this effect will operate like an increase of b_B, shifting the *RR* curve up in *B* and thus causing a rise of the interest rate there. Hence, a rise of *e* will also tend to restore interest rate equality, acting through its effects on the wealth of the foreign customers of *A*'s firms.

One conclusion can be drawn immediately: increased debt in country *A* causes a rise of the world real interest rate. The success of real appreciation in removing the interest rate disparity comes partly from its effect in raising the interest rate in country *B*. (If the effect through *RR* on *r* did not tend to dominate the theoretically ambiguous effect through *ER*, an appreciation of the exchange rate in country *A* would be a move in the wrong direction.)

Some more novel conclusions concern employment in the two countries. First consider the effect in country *B*. Unless the rise in the prospective growth rate of customers has a strong effect on *ERB*, moving it up by more than enough to offset the contractionary effect of the rise of *RRB*, the fiscal stimulus in country *A* contracts employment in country *B*. After the Fitoussi-Phelps work, this result is no longer stupefying.

Now consider the effect in country *A*. In this model, it is theoretically possible that the supply effect of the real appreciation in A will be sufficiently expansionary for employment to overcome the initial contraction caused by the increase of the public debt there. At a geometric level, the explanation resides in the fact that the consequent reduction in the real shadow price of customers needed to induce a given level of output operates to shift outward both of the curves in the left — hand panel of Graph 1 — the upward-sloping one down and the downward-sloping one up.

This theoretical possibility — output increased at home, decreased abroad — has, I believe, the following explanation. On the one hand, in both countries the higher interest rate drives firms to discount the future more heavily and hence to sacrifice less present

cash flow via moderation of their markup in the interest of gaining future customers, a move that is equivalent to offering a reduced real wage for the same level of production. Since the workers "require, as the optimal incentive to combat shirking, an unchanged real wage for an unchanged level of employment, the result is a reduction of employment to the point at which the two real wages are reconciled. On the other hand, the real exchange rate appreciation in country *A*, the origin of the fiscal stimulus, introduces an asymmetry that further discourages supply in country *B* and actually encourages supply in country *A*. This latter effect is the one operating through the peculiar supply curve that makes the amount of output supplied an increasing function of the shadow price of customers — a sort of supply price. Of course, we must not forget we also found that the appreciation has a demand effect that works in the opposite direction; it lower expectations of customer growth in *A*, thus lowers the expected return curve, thus also lowers the demand price for customers, and thus moves the economy downward and leftward along the supply curve. I believe that, at the very least, this demand effect is dominated by the supply effect — recall that we are talking about medium-term projections of an economy largely back at its (variable!) natural rate — though it is an empirical question whether the net effect of the appreciation needed to equalize interest rates will be big enough to offset the contractionary effect of the increased public debt.

Potentially, theorefore, the results of this model are similar to those reached in the Fitoussi-Phelps analysis of a customer-market setting, as well in the two other models studied there. That analysis implied that the fiscal stimulus in *A* is expansionary for that country, in stark contrast to its effect in country *B*. The Fitoussi-Phelps models have an easier time generating an expansionary effect in the country where the fiscal stimulus originates because they allow some degree of short-run monetary non-neutrality, especially in that country, so the higher nominal interest rates resulting from the fiscal stimulus have an expansionary effect.

Note in passing that the appreciation in country *A* will set in motion a gradual outflow of customers from *A* to *B*. Yet it would be a non sequitur to conclude that the medium-term future will witness an ongoing attrition of market share in *A*. If *A*'s wealth owners, laden

with their newfound windfall, sooner or later begin selling off some of their shares in B firms to B's wealth owners, the steady state import bill of A that can be financed by foreign income will tend to erode. So one must expect that in the long run A will gain, not lose, market share, as more customers are repatriated to A firms.

2.4 *The Steady State Under Perfect Foresight*

To check the conjecture of the last paragraph let us proceed to analysis of the long run. There exists, generally speaking, an equilibrium (that is, a correct expectations) stationary state solution to the model, and I will take it that the economy approaches that equilibrium after the initial shock. What are the salient features of such a steady state, and how will the new one differ from the old?

Since the rate of change of x_{BA} equals zero in this steady state, it follows from equation *(9)* in table 2 that $e = 1$ in this state and $r_A = r_B$. Since the rates of change of c_{BA} and c_{AA} are both zero and $e = 1$, it follows from equations *(2)* and *(5a)* that $c_{BA} = c_{BB}$. (If that last equality were not to hold, the customer allocation would still be in flux, and so the steady state would not be in place.) With these solutions, the remaining system reduces to five equations in r, Z_A, Z_B, x_{BA} and s_{BA}.

This system can be analyzed with the aid of back-to-back diagrams of the *IS-LM* type in the (Z_B, r) planes (Graph 2). The four curves generated by these four equations are generally indexed by x_{BA} and s_{BA}. We can think of x_{BA} as provisionally given here and employ s_{BA} to shift up or down the right-hand intersection — the real interest rate as determined in country B — so as to achieve interest rate equalization. This line of thought leads to conceiving a companion diagram, in the (s_{BA}, x_{BA}) plane, in which there is a required s_{BA} for each given x_{BA}. In the same diagram (which is not shown here), we can graph the relationship that shows x_{BA} depends on s_{BA}.

It is now clear how the equilibrium steady state is disturbed by the increase of the public debt that we have been studying. The result in terms of Graph 2 is an upward shift of the steady state RR curve in the (Z_A, r) plane. To restore equality of the interest rates given $x_{BA'}$ it is necessary, to have a decrease of b_B and in A like a rollback of some of

TABLE 4

THE EQUILIBRIUM STEADY STATE

$$(11)\quad r = \{[1 - u_B(Z_B)] / [u_B(Z_B) - MR_B]\}\,[-j_{B'}(1)]$$

$$(12)\quad r = \varrho_B + M_B\{[Q_B(,)(1 - x_{AB}) + Q_A(,)s_{AB} + b_B] / [(Z_B + - G_B)/(1 - x_{AB})]\}$$

$$(13)\quad r = \{[1 - u_A(Z_A)] / [u_A(Z_A) - MR_B]\,[- j_{A'}(1)]$$

$$(14)\quad r = \varrho_A + m_A\{[Q_A(,)(1 + x_{AB} - s_{AB}) + b_A] / /(Z_A - G_A) / (1 + x_{AB})]\}$$

$$(15)\quad [(Z_B - G_B)/(1 - x_{AB})]\,x_{AB} = = [1 - u_A(Z_A)]\,[(Z_A - G_A) / (1 + x_{AB})]s_{AB}$$

where: $Q(Z, c) = (-1/j')(dc/dP)[u(Z) - MR]$, and $P = 1$, and MR is presumed independent of Z.

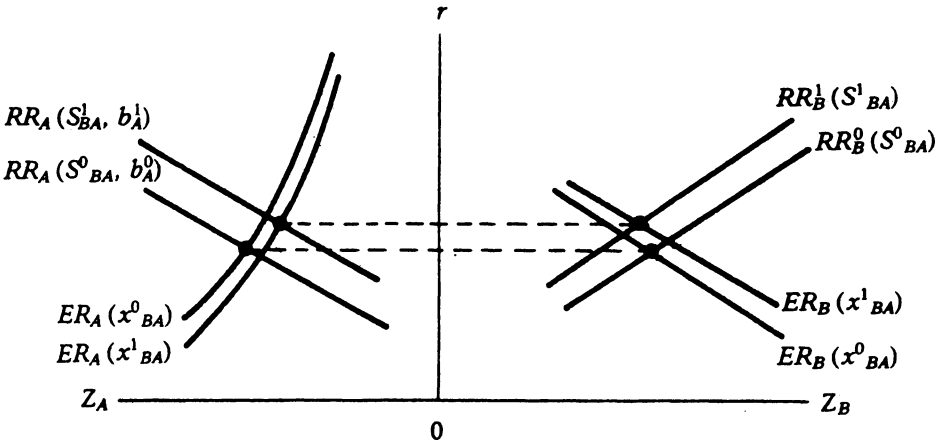
the increase of b_A. The steady state RR curve is thus shifted down in country A and up in country B. The equalization must therefore, occur at a world real interest rate that is higher than the one that prevailed in the equilibrium steady state before the shock.

A steady state result of the fiscal shock is, then, a leftward shift of the curve giving s_{BA} as a function of x_{BA} in the (s_{BA}, x_{BA}) plane. The other curve in this plane, the one giving x_{BA} as a function of s_{BA}, is unambiguously upward sloping. Hence, the leftward shift of the former curve implies a downward and leftward movement of the intersection of the two curves — and thus a final decline of s_{BA}, mutatis mutandis, which pulls x_{BA} down with it — if and only if the former curve is either downward sloping or steeper than the latter curve. This seems to be the relevant empirical case.

I believe the following propositions can be shown, though I cannot give the full arguments here since doing so would require presenting a more detailed version of the model. First, there is a rise in the steady state world real interest rate by virtue of the fact that the increase in the public debt in country A ultimately drives up the

GRAPH 2

THE STEADY STATE



required interest rate curve, *RR*, in both countries. As a result, both countries move up their IS curves — more precisely (in view of the ambiguity about which curve a is best understood as the IS curve), up their negatively sloped *ER* curves. Second, there results a contraction of output in *both* countries in the steady state. (This conclusion is less theoretically certain owing to the possibility that the *ER* curves themselves may move in response to the redistribution of market shares.) If, as assumed, the end is a net reflux of customers from country *B* country *A* and if such a reallocation lowers the interest rate in *A* and raises it in *B*, the rise of the world interest rate will be moderated and sB_A decrease less than would otherwise have been required to restore interest rate equality. The rise of the world interest rate cannot, however, be reversed by this process since the rightward shift of the curve giving *sBA* as a function of *xBA* moves to the left only because a higher interest rate is required in *B* to match the increase in *A*. (If, counterintuitively, *xBA* actually increases, that change will pull the interest rate up in *A* and push it down in *B*, and so the rise of the world interest rate will be worsened and *sBA* will actually be increased.)

There seems to be no escape from the conclusion that in the equilibrium steady state, increased debt in country *A* decreases employment in both countries. If it is granted that the world real interest rate is increased in the steady state, it will be readily agreed that the real wage in both countries must be reduced in the new steady state. Then it can be seen that a lower real wage can mean only a downward and therefore leftward movement along the equilibrium real wage-employment locus arising from the incentive wage theory of labour market unemployment equilibrium used here. This finding is a contraction of the hypothesis of steady state employment.

3. - Concluding Comments

Two reactions to this paper seem appropriate. The first is that the structure of the model is not very hospitable to the rigourous analysis needed to resolve many of the questions about the behaviour of this kind of theoretical economy. The second is that the above analysis has merely scratched the surface of what is there to be examined. On this second point, the obvious observation is that there is an intermediate period between the near term and the far term. What is happening in that intervening time? In particular, if the final tendency is for both xBA and sBA to be decreased by a debt increase in country *A*, so that the initial tendency of a flux of customers from *A* to *B* must sooner or later be reversed and actually exceeded by reflux from *B* to *A*, there must be a period, following the glorious strength of the real exchange rate in *A* in which that rate is weak. This hypothesis, if true, suggests that the contraction in *B* that occurs early in the response to the fiscal shock in *A* will tend to be followed by a period of expansion, possibly even to boom levels of employment.

My final comment is to remind the reader that the model presented here is not the only one capturing the interaction between countries that occurs through the world capital market. There is, for example, the sort of two-sector setup, with a consumer good and a capital good, that Fitoussi and I in the third of our models. Let us touch briefly on a variation of that sort of model, one invoking the traditional assumption of differential factor intensiveness betzeen the

sectors, with the consumer good being the more capital — intensive and the capital good more labour — intensive. Assume that capital is perfectly shiftable between the two sectors. Suppose that country *A* undergoes a shock that shifts out the excess supply of the investment good. This will cause a decrease in the real price of the investment good, which will, in turn, lower the real demand price for labour at any specified level of aggregate employment in country *B* since production of the investment good is relatively labour — intensive. The decline in the real wage offered, given an invariant real wage equilibrium locus, spells a decline of employment in *B*.

It is not hard to specify shocks of this nature in *A* that have the additional effect of raising employment in *A* that country. A student at Columbia University, Hian Hoon, has worked out an example of this kind, a positive technological shock in the investment — good sector in *A*. Presumably a subsidy in *A* to the production of capital goods would have similar effects.

Thus, there are a variety of models capturing the interaction of countries through the world capital market and the price that it determines, the world rate of interest. Only empirical research will tell which of these models (more likely, which blend of these models) is the most pertinent description for the explanatory purposes at hand. Of these various sorts of models available, the customer-market one is possibly the most "ornery" and inelegant. Yet I wonder whether it is possible to understand events over a medium-term horizon without recognizing the informational frictions that impede adjustments in the product market and without taking carefully into account their myriad system effects.

BIBLIOGRAPHY

[1] FITOUSSI JEAN-PAUL - PHELPS EDMUND S.: «Causes of the 1980s Slump in Europe», *Brookings Papers on Economic Activity*, n. 20, 1986.

[2] ——: *The Slump in Europe: Open Economy Theory Reconstructed*, Oxford, Basil Blackwell, 1988.

[3] MUNDELL ROBERT A.: *International Economics*, New York, MacMillan, 1968.

[4] PHELPS EDMUND S.: «A Working Model of Slump and Recovery from Disturbances to Capital-Goods Demand in an Open Non Monetary Economy», in NELL EDWARD J. - SEMMLER WILLI, (eds.): *Nicholas Kaldor and Mainstream Economics*, London, MacMillan, Forthcoming, 1989.

[5] ——: «An Extended Working Model of Slump and Recovery from Disturbances to Capital-Goods Prices in an Overlapping-Generations Closed Economy: 'IS-LM' without Money», in CARSTEN HEYN-JOHNSON (ed.): *IS-LM after Fifty Years*, London, MacMillan, Forthcoming, 1989.

[6] ——: «A Working Model of Slump and Recovery from Disturbances to Capital-Goods Demand in an Open Non-Monetary Economy», *American Economic Review*, vol. 78, n. 2, 1988, pp. 346-50.

[7] ——: *Aggregate Demand in the Equilibrium Theory of a Non-Monetary Economy*, (Rev. version), mimeograph, New York, Columbia University, 1989.

[8] ——: *The Effects of Productivity, Total Domestic Product Demand, and 'Incentive Wages' on Unemployment in a Non-Monetary Customer-Market Model of the Small Open Economy*, Roma, Dipartimento di Economia, Seconda Università, Forthcoming, 1989.

[9] ——: *Fiscal Stimulus and Employment in a Real Customer-Market Model of the Small Open Economy*, Roma, Dipartimento di Economia, Seconda Università, 1989.

[10] PHELPS EDMUND - SIDNEY G. WINTER Jr.:«Optimal Price Policy under Atomistic Competition», in PHELPS E.S. *et* AL. *Micro-economic Foundations of Employment and Inflation Theory*, New York, W.W. Norton, 1970.

III - THE EUROPEAN MONETARY AND COMMERCIAL AREA

EC 1992: Prospects and Problems

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Five hundred years after Europeans discovered North America, Europe is to form an integrated market by removing all border controls between the 12 members of the European Community (EC). This is what project 1992 is about. It can be interpreted as the last and most important step in a series that started four decades earlier with the formation of the European Coal and Steel Community under French leadership in 1952. The last step is to bring about the removal of all obstacles to cross-border trade in goods and services and to the free mobility of capital and entrepreneurship, including the human capital of professionals.

The intermediate steps were: *a)* the formation between 1958 and 1968 of the EC customs union, which covered industrial products and mainly promoted intraindustry trade; *b)* the accession to the EC of Britain, Ireland, and Denmark in 1973; *c)* the arrangements for free trade in industrial goods with the European Free Trade Association (EFTA) countries (Austria, Finland, Iceland, Norway, Portugal, Sweden, and Switzerland) in 1973; and *d)* the entry to the EC of Greece in 1981 and Spain and Portugal in 1986.

The movement toward freer trade has so far been limited to industrial goods, and it has suffered from protectionist setbacks. Non-tariff barriers against imports from third countries were imposed by individual member states; they would have been circumvented had they not been supplemented by intra-EC border controls. They were

applied to textiles and steel, but, for instance in the case of France, also to cars and machinery. Moreover, there are — or were — quantitative restrictions or import prohibitions on pharmaceuticals, alcoholic beverages, and products that do not meet national standards and norms.

Two different views or paradigms of Europe's integration movement, have been in conflict from the beginning. One paradigm is what Hayek calls "constructivism" or "constructivist rationalism." Its focus is on institution-building, bureaucratic integration, political unification, and centralism — some form of French planning. Its philosophical roots go back to Descartes and have been nourished up to the time of Delors by what Hayek termed the "pretence of knowledge" (Hayek [9]) (*). As central planning is out of the question nowadays, the paradigm favours regulation and the harmonizations of institutions, taxes, and norms before the removal of border controls. This policy paradgm comes close to Europe's corporatist traditions, which, of course, go back to the medieval guild society. When applied to the EC in the beginning, these corporatist and centralist tendencies were severely attacked by the German neoliberals of the 1950s, including Wilhelm Röpke and Ludwig Erhard, who was the Bonn government's first economics minister and second chancellor (Giersch [6]).

These critics held the opposite view, in recent years most openly pronounced (though unfortunately with some nationalistic overtones) by Margaret Thatcher in her famous Bruges speech. This view holds that markets know better than bureaucrats, that productivity arises from diversity rather than uniformity, and that harmonization will come about, to the extent that it is useful, by the pressures of evolutionary competition, which is interpreted as a process of discovery (Hayek [8]). Competition helps to identify the cheapest supplier of a product or service, the best location for a firm, the most suitable means of communication or payment, the institutional arrangements most suitable for productivity growth, and the combination of taxes and public goods preferred by the relevant public. Instead of politicians and bureaucrats, the last word in the choice of

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(*) *Advise:* the numers in square brackets refer to the Bibliography in the appendix.

money and norms, of institutions and goods, can and should go to the consumer, who is to be seen as needing no paternalistic guidance. "Exit" rather than "voice" is the means of voting that will become predominant once the obstacles to the free movement of goods and services, people and capital have been removed. Currency competition would be the best means of finding out to what extent the Common Market needs a common currency, just as participants decide by themselves what language to use in contracts. Esperanto, by the way, would not suggest itself as a viable solution to the linguistic part of the communication problem, and from this a parallel could be drawn to money.

Exceptions to the rule of market superiority are obvious: they concern market failures in the form of negative external effects, such as on health or the environment. On the other hand, increasing returns from scale are no such externality, as we know, so technical norms will gain ground in a competitive process without needing any government support or coercion. Centrally imposed technical norms are even dangerous; they are easily used as a basis for administrative protection against imports from third countries.

In the present German policy discussion, one term has emerged that describes the comprehensive nature of institutional competition well: "Standortwettbewerb" — competition among locations. Cities compete with cities, regions with regions, countries with countries. And they compete for the mobile resources: for investment and human capital, for entrepreneurs and good taxpayers. We also see central banks competing with each other for the holders of their money. All of these institutions can improve their competitive positions — for the benefit of the immobile resources — by offering good services and public goods at low cost. The mobile resources will vote with their feet. And governments that behave irresponsibly by running deeply into debt will observe in the capital market how their ratings as borrowers go down. This experience will improve fiscal discipline. Workable competition for mobile resources, however, requires that governments be prevented from setting up common funds and forming cartels under such appealing names as unification or harmonization.

According to this view — which I happen to share — the best that

Europe can expect is that the harmonization agenda will remain unfinished on December 31, 1992, and that border controls will nevertheless be removed the next morning, just as governments have promised.

The European Court achieved a breakthrough for harmonization under the pressure of market competition when it ruled against the German government in deciding that domestic regulations fixing the ingredients of liquor, beer, and sausages must not be abused to prevent the import of such products from other EC members (Court of Justice [3]). Consumer protection had, of course, been invoked as an argument for what was actually producer protection. The ruling of the European Court means a shift from the principle of the country of destination to the principle of the country of origin. What is legally produced in the country of origin must be accepted as legally produced in the country of destination. EC members have now agreed to respect each other's norms in the Single European Act. But they are still reluctant to put the country-of-origin principle into practice; they leave it to the court to decide in specific cases.

Competition is the key to faster productivity growth. If EC Europe should have more competition — in the goods and factor markets, among regulatory systems, and in the field of public goods and taxes — then the old continent can look forward to a reacceleration of economic growth in the 1990s. Calculations published by the EC Commission promise a once-and-for-all gain in Europe's potential output of 2 to 3% from the removal of border controls alone and another gain of the same order of magnitude from the improvement in the general competitive climate (Commission [2]). To put it differently: with a trend rate of growth of potential output in the range of 2.5%, EC Europe could have growth rates of actual output ranging between 3 and 4% for half a decade. But this is not the upper limit.

My guess is that Europe has a good opportunity to lift the rate of growth of potential output from 2.5% at present to 3.5% in the foreseeable future and to add a once-and-for-all gain of 5% on top of it over half a decade, so that actual growth rates in the mid-1990s would be in the range of 4 to 5%, as they were in the golden 1960s.

The general reason for my optimism is that, in matters of long-run growth, we can rely on some forms of mutual causation.

There are virtuous and vicious circles. Europe had and induced productivity acceleration during the post-war process of decontrol and liberalization, of reconstruction and catching-up with the United States. A productivity deceleration, still largely unexplained by traditional economics, followed when the long upswing came to an end after 1968 — with a wage revolt in Europe, with the oil price shocks, and with the awareness that owing to environmental damage rapid growth could no longer be permitted. Instead of making the market system more flexible, to permit quick adjustments, European governments expanded in size at the expense of the private sector and took refuge in a protectionist policy, international and domestic. This whole process can now be reversed. If it is not reversed on the occasion of the 1992 supply shock, Europe will have missed her greatest opportunity in decades. To repeat: The growth rate of trend productivity (per manhour) can well be raised from 2 to 3%. With some increase in employment, the trend rate of growth of *output* could be 3.5% instead of 2.5%. Europe's rates of actual output — for a few — could then well be in the range of 4 to 5%.

Let me briefly sketch some specific reasons for my optimism:

1) twenty years of relative stagnation since 1968 have mitigated the real wage pressures that brought the long post-war upswing to an end;

2) oil prices have declined;

3) we have digested the new costs associated with environment a concerns, at least to a considerable extent;

4) inflation, which during the 1970s permitted the accommodation of the great cost push, has now abated;

5) real interest rates have been high enough long enough to make investors aware once again of the need to choose projects with a high capital productivity;

6) returns on investment in Europe are no longer below what firms can earn form investing in financial assets;

7) wage moderation has helped to make current growth employment-intensive again;

8) an increase in the demand for labour has made the labour

market more flexible, encouraging employers to engage in search activities and in investment in human capital. A positive hysteresis effect is, therefore, possible in the future;

9) the pressure of (investment) demand against existing capacities should reduce protectionist pressures;

10) governments may learn that present inflationary dangers can best be fought by removing restrictions on the supply side, in contrast to producing a recession by suddenly restricting monetary growth. European prosperity, supported by domestic liberalization, would also improve the prospects of worldwide liberalization and of a successful outcome of the *Uruguay Round* of GATT — provided that Europe can solve its agricultural problem as outlined below.

There are already signs that European businesses are preparing for more intense and innovative competition after 1992 — a development that should increase the trend rate of labour productivity in Europe. Some of these signs are as follows: *a)* casual empiricism suggests that firms are already speeding up investment in preparation for 1992; *b)* competition is increasingly interpreted as innovational competition and time competition: speed up innovation, shorten the product cycle; *c)* more and more firms recognize innovation to improve the location of production — locational innovation — as a new element in evolutionary competition: if you cannot reduce costs for old products where you produce them now, you had better either purchase them from low-cost producers elsewhere or produce them yourself in low-cost locations. This approach will make better use than is made non of the catching-up potential of low-wage areas or countries in Europe and elsewhere; *d)* time competition will press for better use of the computer and its productivity potential, both for innovation and for the decentralization of decision making; *e)* organizational innovations are high on the agenda of firms. Although I deeply distrust the synergy arguments brought forward in discussions about mergers, I must mention them here as a potential source of temporary productivity improvements that could be made permanent in combination with organizational efforts to decentralize routine decisions.

The general point about productivity advance in this context is that productivity can once again start to rise faster than real wages in

order to produce a wage lag similar to what Europe had in the 1960s. Monetary policy should, of course, accommodate better growth prospects or even anticipate them if the 1992 supply shock turns out to be accompanied, as I hope, it will be, by deregulation that raises Europe's supply responsiveness.

Though many fellow economists would disagree with me, I would be quite happy if Europe were to make itself so attractive on world capital markets ofter 1992 that it would import capital from the rest of the world and run a current account deficit, at least for a couple of years. In fact, the marginal efficiency of business investment in Europe has already improved, a development that is likely to reverse the outflow of capital and to attract capital from abroad. Foreign direct investment in Europe will be induced by the trade diversion effect of Europe 1992 as well. And under the pressure of locational competition, regional and local communities in Europe will increase the volume of infrastructural investment and thus add to the demand side of the capital market.

The capital inflow will help to reduce Europe's capital shortage unemployment (by creating jobs that are sufficeintly productive to match prevailing minimum wages and that also provide learning opportunities to less experienced workers), and the worsening of Europe's current account will, one hopes, mitigate protectionist pressures abroad and encourage a better international division of labour worldwide.

The decline of unemployment and the overall prosperity after 1992 should make it easier to combat internal protectionism in the form of excessive regulations, job pretection, and preference for nearby suppliers in public procurement. A demand pull on the labour market wourd greatly reduce — or even overcome — "Eurosclerosis."

This scenario is the opposite of the vicious circle that was observable in Europe in the 1970s; indeed, it looks like a parallel to Europe's long upswing in the 1950s and 1960s, which was similarly supported by decontrol and deregulation, liberalization, and the completion in 1988 of the EEC customs union.

Europe's new prosperity it should make it easier to solve the continent's agricultural problem. A switch to world market prices is not unrealistic. It could be facilitated by giving farmers full compensa-

tion for the net income loss they are likely to suffer and by capitalizing future income transfers for this purpose by offering landowners or farmers interest-bearing government bonds that they could sell in the market in order to make investments for better land use, including re-forestation. These arrangements would improve resource allocation and growth in Europe and could contribute to the success of the *Uruguay Round* of GATT negotiations.

The greatest risk emanating from constructivist thinking has to do with is what has been termed "the social dimension" of Europe 1992. The phrase implies prior harmonization of labour regulations in order to avoid "social dumping", as the German unions call it. Such harmonization would deprive backward areas and countries of their catching-up potential. Instead of attracting capital and productive jobs, these regions would demand subsidies from common funds and would offer fewer opportunities for the young, who would then emigrate and create a guest-worker problem in the advanced parts of the EC. Finally, the less developed parts of the EC, such as Portugal, would demand — and certainly receive — protection against imports from less developed countries in the Third World. Corporatism and constructivism are thus likely to promote tendencies toward a "fortress Europe".

Some 15 years ago, I was afraid that a common currency, by offering a common denominator for wages, would lead to excessive wage equalization in Europe (Giersch [4]). This possibility need not be feared any longer, since the EC has become much larger and labour unions are not as strong as they used to be. In this respect, Europe has become more like an optimum currency area.

Does Europe need a common currency? Constructivists say yes. They are right in asserting that a single currency for a single market would save transaction costs, thus facilitating market integration. They join with corporatists who think that the best means toward this end would be a merger of central banks arising from increasingly closer cooperation under the rule of fixed exchange rates. This cartel solution is likely to be adopted, perhaps with a view to giving the emerging EC central bank an independent status similar to the Bundsbank's independence from the Federal Republic's government.

Opponents of constructivism and corporatism do not deny the argument of lower transaction costs. Money is a means of exchange

just as language is a means of communication. But it is for market participants to decide what money and language they want to use in their contracts (Vaubel [10]). A monetary Esperanto might not prove fit to drive out competing means of exchange or communication even if it were imposed as the exclusive instrument for legal transactions. The reason is that contracts have a time dimension and hence money must also serve as a standard of deferred payments. Lower transaction costs will not be desired if their advantage is outweighed by uncertainty about the future value of the means of payment and the unit of account. This uncertainty arises if the issuer of money has monopoly power that it can exploit in the pursuit of a maximum seignorage gain or inflation tax. Non-constructivists who are opposed to such monopoly power are, therefore, highly sceptical about any money that is not subject to the controlling forces of currency competition. Free trade in money should, in their view, supplement free trade in goods. And if there is a case for a separate European currency, this currency ought to conquer its market as a parallel currency, which it would do only if it promised to be more stable than the national currencies it was supposed to replace.

Such a currency could be a cocktail of currencies like the European currency unit (ECU). The ECU's definition can and should be improved so that this unit of account promises stability in terms of goods and services. The formula would be quite simple: whenever the price index in France, measured in French francs, went up by x%, the number of French francs in the currency cocktail or basket would have to be increased by x%. The same formula would apply, of course, to any other currency constituting the ECU. Holders of ECUS would thus not be subject to any inflation tax, and the demand for ECUS would rise at the expense of national currencies unless the latter, on their part, became stable in terms of goods and services. This simple idea has, of course, no appeal whatsoever to European central bankers, who prefer the (presently discussed) path from an exchange rate cartel to a monopoly by merger.

Another red herring in the European debate is the supposed need for tax harmonization. Most governments want it because they are afraid of tax competition as a form of competition of location. And the business community instinctively favours it because it instinctively

hopes thut it will contribute to the harmonization of costs as a basis for price cartels.

My earlier plea for competition of location among governments prevents me from supporting tax harmonization as a citizen. A tax cartel is likely to impair fiscal discipline and lead to higher tax rates, since there will still be government competition of location on the expenditure side. Moreover, we do not know what the optimum tax system that tax harmonization should approximate is. In fact, the optimun system certainly varies from place to place and from time to time.

An argument recently put forward by a spokesman for the German ministry of economic affairs was that without tax harmonization we could not move toward a system with lower direct and higher indirect taxes. Such was the agreed objective, he said, based on agreement among economists. How does he know this? Who can assert that a consensus, even among experts, comes close to the truth about a matter that is basically normative and must be left to people's preferences? Perhaps the issue of direct versus indirect taxes will turn out to be irrelevant, since both are taxes on efficient behaviour whereas our concern has shifted to inefficiencies, including an inefficient use of the environment. A harmonized system is as inflexible as a cartel, whereas fiscal competition offers wide scope for experiments as a source of new knowledge.

Most people think that VAT levels ought to be harmonized in order to avoid distortions when it becomes impossible, after 1992, to levy VAT on imported goods and to reimburse VAT when goods are exported. This is an erroneous proposition. The VAT is not a paternalistic consumption tax introduced to compensate for distorted preferences of domestic consumers, but rather a tax like the income tax or any other direct tax raised to finance the supply of public goods that are inputs in domestic production. Yet no one has suggested that direct taxes be refunded when a product is exported and that domestic direct taxes be levied on goods imported from abroad. It is the present, VAT system that has a bias.

This system discriminates against tourism in countries with high VAT levels, since it allows these countries to have an overvalued exchange rate. The exchange rate can be overvalued because exports

are promoted by a heavy refunding of VAT as then cross the border, where as imports are hampered by the levying of the (relatively high) VAT. This refunding and levying is not applied to tourist services that foreigneres consume within the country; hence the discrimination.

If border controls are removed and refunding and levying is stopped, countries with excessive VAT levels will have to devalue to make exports (almost) as competitive as they were with refunding. On the other side, import prices will go up to compensate for the fact that the protective VAT is no longer levied. At the same time, the country will become more competitive in the field of tourist services.

Instead of devaluing, a country with relatively high VAT levels can compensate for the switch by wage moderation or by a fall in land values. Either alternative would leave real factor remuneration unchanged and would benefit the domestic tourist sector as well.

The business community is concerned with taxes on corporate profits. In this field, tax competition is likely to bring about, fairly quickly, a kind of harmonization on a lower level. Governments are sensitive in this respect because firms are likely to become more multinational and to shift the tax base, and even the locus of production, to countries with lower profit taxes. This downward harmonization need not be of concern in the longer run. Firms do not really bear taxes; they merely raise them from their customers or, if they cannot shift them forward, from the factors of production employed, notably from landowners and immobile labour. Indeed, it is the immobile factors of production that have the greatest interest in an efficient fiscal system, local, regional, or national. The mobile factors exert the competitive pressures.

In the last analysis, the case against fiscal harmonization rests on the diversity of cultural traditions in Europe. Tastes and habits are different; and so is tax loyalty. These factors may become more uniform as time goes on, but we cannot predict the pattern that will evolve. Hence there is no way to define it in advance, as would be necessary for ex ante harmonization.

Western Europe's historic contribution to modern civilization arose from its diversity, as we can gather from a comparison with the homogeneous empires on the less diverse land masses in the eastern

parts of the Eurasian continent (Weede [11]). The fertile diversity of Western Europe, supplemented by the smallness and openness of its states in the pre-nationalist period, is worth being preserved and should not be sacrificed in the name of some continental unity.

BIBLIOGRAPHY

[1] COMMISSIONE DELLE COMUNITÀ EUROPEE: «Completing the Internal Market», *White Paper from the Commission to the European Council*, Brussels, 1985.

[2] ——: «Research on the Costs of Non-Europe, Basic Findings», vol. I, *European Economy*, n. 35, March 1988, pp. 122-47.

[3] COURT OF JUSTICE OF THE EUROPEAN COMMUNITIES: «Urteil vom», *Rechtssache*, n. 120, 1979.

[4] GIERSCH H. *et* AL. *European Economic Integration and Monetary Unification*, Commission of the European Communities, Brussels, *Chapter D.*, 1973.

[5] ——: «Internal and External Liberalisation for Faster Growth», Brussels, Commission of the European Communities, *Economic Papers*, n. 54, 1987.

[6] ——: «Liberal Reform in West Germany» *Ordo*, n. 39, 1988, pp. 3-16.

[7] ——: «Anmerkungen zum Denkansatz weltwirtschftlichen», *Weltwirtschaflichten Archiv*, n. 129, January 1989, pp. 1-16.

[8] HAYEK F.A.: «Der Wettbewerb als Entdeckungsverfahren», Kiel, *Kieler Vrtraege*, n. 56, 1968.

[9] ——: «The Pretence of Knowledge», *Nobel Memorial Lecture*, Stockholm, 1974.

[10] VAUBEL R.: «Strategies for Currency Unification», Tubingen, *Kieler Studien*, n. 156, 1978.

[11] WEEDE E.: «Der Sonderweg des Westens», *Zeitschrift für Soziologie*, n. 17, June 1988, pp. 172-86.

The European Monetary System and Its Predecessors

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There are two ways of approaching the subject of my paper: the "fundamentalist" way and the "political economy" way. I shall take the second way first.

As I write, the world is witnessing an unusual phenomenon: the almighty deutsche mark is under presure, and yet West Germany's external trade balance shows a huge and continuing surplus. There have been two other episodes of weakness in the career of the Mark since the 1950s. The first, however, occurred, as a result of a weak German trade balance or, at least, in conjunction with it. And when the second episode occured, in the late 1970s, the United States virtually imposed expansion on the recalcitrant Germans. This time we are watching a new ball game. The mark, the famed "nominal anchor" of the western European monetary sub-system, is weak because the German monetary authorities want it to be weak. They have consciously refrained from raising real interest rates and are maintaining a negative real interest differential vis-à-vis the US dollar. They are also cooperating with the Group of seven monetary authorities to keep currency markets orderly and thus to allow the dollar to rise in an orderly fashion. For once, they are not sterilizing their exchange market sales of dollars in the hope that this strategy will cool down the German economy in the medium run without penalizing German exports.

In the short run — that is, until the next elections in Germany — the Bundesbank is deferring to the German government and

willingly refraining from raising interest rates to a level that would keep the dollar-mark exchange rate stable. It is deferring to the imperative of not disturbing the ruling political coalition with a drastic interest rate policy that would unbalance the already disturbed German financial market and cause unemployment and recession for German industry.

Where today are the bards, domestic and international, who for three decades, sang to the skies the heroic, unshakeable, pristine virtues of Bundesbank autonomy, allegedly an example to us all?

On the other hand, the Bank of Italy and the Bank of France, so well-known for their political bias, have for the last five years allowed their currencies to experience very substantial real upward valuations and their real interest rate to rise above the German rate.

A new era seems to have dawned. The nominal anchor and its immediate neighbours and satellites, the Swiss franc, and the Dutch florin, seem to have abdicated their role and humbled themselves, as they did in the 1950s, to his majesty, the US dollar.

This is the more extreme view. The less extreme view foresees a strong US dollar until the end of 1989. It will start to weaken when President George Bush, as he is expected to do, pronounces the T-word — that is, when he strikes a fiscal deal with Congress and relieves US monetary policy of its present role. US fiscal tightening and monetary thaw, it is alleged, will make the mark strong again. This prediction assumes, of course, that the German ruling coalition will win the elections. If it does not, the mark may go on being weak, and the German economy strong, in spite of US economic policy.

Recent events have pretty well put paid to most current interpretations of the origins, nature, and functions of the European Monetary System (EMS). As a careful reading of the alarmingly large mass of papers on the subject will show, the prevailing view among economists is that the EMS was launched, back in 1978 (it did not formally get under way until March 1979), to provide an area of monetary and exchange-rate stability in Europe after the wild gyrations of the US dollar in currency markets in the 1970s — gyrations that were the result of double-digit inflation in the United States and the reneging by the United States of the responsibilities it had allegedly assumed at Bretton Woods.

The image is summoned up for us of a club of responsible and stability-loving countries whose leaders finally stood up to the reprehensible and immoral behaviour of their spendthrift hegemon. It is an old story in the monetary annals of the world: the subjects, who have no say in the sovereign's monetary policy, finally can stand no more taxation without representation and set up a money shop of their own. Yet as valid as this image may be as a depiction of other historical instances, it is false in the extreme as a representation of this origis of the EMS.

The EMS concludes rather than begins a period in which a part of Europe stood up to US monetary hegemony. Throughout the 1970s Germany stood nearly alone supported only by the small satellites of the mark bloc, as a bulwark of monetary stability and orthodoxy against American double-digit inflation. It paid a very high price for sticking to its monetary principles. The mark constantly went up in value against the dollar and the currencies of the other large European countries. The latter currencies presently jumped ship, and the European snake was transformed into a mark bloc. The result was a dangerous decline in Germany's trade balance. Unemployment rose and industrial capacity fell idle. It was a new experience for a country that had relied on export-led growth for almost 30 years.

The ruling Social Democrats were convinced by their advisers that a policy of currency appreciation would speed up the inevitable process of change that was taking place in the international division of labour. German labour costs were simply too high — it was argued — to stand competition from cheap-labour countries in labour-intensive products and industries. An expensive mark would be the midwife of structural change for German industry moving it away from semi-proletarian modes of production and toward those paramount specialities of German industry, state-of-the-art investment products and top-of-the-line consumer durables. It was a good plan, one that would have brought the world of international trade back to Ricardian complementarity and moved the German economy away from the ridiculous, almost humiliating position it had been assigned by military defeat which had lunged it back into producing labour-intensive goods like any industrial upstart.

Like many another good plan, however, this one misfired. It was

not the direction that was wrong; it was the timing. Moreover, the planners had overestimated both the strength of the German economy and the ability of a democratically elected government to stand mass unemployment. They had also overlooked the fact that the German banking system, unlike those of most other developed countries, was the owner of German industry's vital core and that German industry was still mainly financed by bank loans. A restructuring of German industry that involved massive plant closures would have intolerably weakened the German banking system. This was why the German monetary authorities had always rejected the stop-and-go policies practiced in Britain in favour of a slower but much steadier rate of growth, which avoided the heavy deflations that would be lethal to the German industrial-financial complex.

German industrial restructuring had been planned by its Ricardian fathers either to take place in a timeless dimension or simply to take a rather long time. But the freedom of capital movements that prevailed in the 1970s — a consequence of the oil crisis and the complexities of US policy — sped the process up so much that it jumped off rails. Capital inflow caused a faster and steeper rise in the mark than was able to bear. Plant closures and massive unemployment followed. Exports plunged. Moreover, the US government was dissatisfied. For its own domestic policy reasons, it had to find a scapegoat for the rapid decline of the dollar as capital moved to Germany. The scapegoat was the Germans' supposedly excessive love of monetary stability, which, according to the Americans, was destabilizing the rest of the world. The Germans were told that more demand had to be pumped into their economy if Germany wanted to remain a responsible member of the western alliance and continue to be defended by American arms.

Presently, a spy scandal displaced Willy Brandt from the German chancellorship. His successor, Helmut Schmidt, understood that Germany's attempt to reacquire economic sovereignty had to be called off before it brought down the coalition and the German economy.

The EMS was an elegant solution to Germany's problems. Schmidt and Giscard, who planned it, were able to represent it as an attempt by Europe to restore stability to a world that the wild gyrations of US policy were reducing to a gambling casino. The EMS

was advertised as an alternative to a dollar area shaken by intolerable tremors. And such was the credibility of German monetary virtue that the other EMS participants went to the utmost length, in negotiating the EMS agreement, to exorcise as much as they could of the deflationary bias that German monetary hegemony was supposed to impart to the system. They wanted to have as much "symmetry" as possible; they did not want to follow the mark on its almost inevitable spiral of appreciation.

It was a masterstroke on the part of Chancellor Schmidt. He founded the system in order to terminate the era of German currency appreciation and to keep what was left of Germany's industries and their workers, who were his party's voters. The mark would henceforward be shielded from the dollar by a layer of weaker European currencies. Germany would stop being reviled in the American press and Congress as the institutional culprit responsible for keeping good American working-class families out of employment and American industry's profits lean.

If German political economic motives in founding the EMS were clear, those of the other countries of the European Economic Community (EEC) were equally clear. And particularly clear were French motives. EEC had been based at its inception on the Bretton Woods assumption of stable exchange rates. All of its common policies assumed fixed exchange rates. Above all, fixed rates were taken for granted by the Common Agricultural Policy (CAP), which was and still is the most remarkable example of a giant supernational policy. Run by international bureacrats and consuming up to 90% of the EEC Commission's budgetary resources for the benefit of farmers who, owing to gerrymandering, are still very important in Europe's political geography. By devising a policy that guaranteed high prices and protectionism for European farmers, the CAP designers ensured that marginal farmers would survive and efficient ones prosper. The administration of the policy, moreover, provided a very capacious pork barrel for European politicians.

These considerations were especially important to France, the largest and most efficient agricultural producer in the EEC. As the Common Market had given German industry a chance to develop in a Europe without internal trade barriers so the CAP would give French

agriculture a secure and prosperous future. Moreover, this prosperity would not occur at the expense of other European farmers. European taxpayers would foot the bill, and efficient non-EEC agricultural nations would lose their traditional export markets in Europe.

This delicate balance, which had promoted European reconciliation and fostered economic integration and growth to an extent never attained before, was put in grave danger by the exchange rate fluctuations that started with the floating of the dollar in August 1971. Germany's satellites followed Germany and allowed their currencies to appreciate, but the other major European currencies followed the dollar, though not at an even pace. Intra-EEC exchange oscillations wrought havoc with the CAP. A remarkable system called the *Montants Compensatifs* was hastily devised; it prevented farmers in the countries whose currencies had lost value from selling all of their crops to the CAP administrators of the countries whose currencies had appreciated. The latter countries were thus accorded compensating balances that restored farm prices to equality more or less, and prevented the perverse price movements that would otherwise have occurred.

The great weight of these balances and the cumbrousness of the mechanism threatened to destroy the very essence of the CAP. They were rapidly turning almost folkloristic agricultural districts in the appreciating countries, and particularly in Germany, into powerful food producers. It was thanks to these compensating balances, for instance, that Germany become the largest milk exporter in Europe.

France could tolerate the ruin of the CAP even less than Germany could tolerate the erosion of its industrial market share in Europe and in the world as a whole. Hence the collaboration of France and Germany in creating the EMS.

These were the real origins of the EMS. And the system has worked as it was supposed to. It has helped to keep the European community together in a turbulent world economy. It has stabilized and reversed German industrial decline. It has maintained France as the agricutural powerhouse of Europe. European agricultural manpower has continued its slow but quiet and happy decline while the agricultural sector continues to make a lot of money by producing very abundant crops at a very high cost to the European taxpayer.

And European politicians (the German now paramount among them) are still very reluctant to alter in any way the mechanism of the CAP, which has proved to be such an excellent political and social stabilizer. It is expensive, but it works.

Viewed from this angle, the success of the EMS looks reasonably clear. What has this success consisted of? The member countries, exchange rates have converged, and intra-European exchange rate stability has been assured. This, and this alone, was what the EMS was supposed to accomplish. And it has accomplished it, thereby rescuing European integration from almost certain collapse.

Almost all of the other merits that have been attributed to the EMS have been successfully challenged by careful analysis. It has been called an asymmetrical system, run by German monetary policy. The nth country argument has been wheeled out and used. But it has been shown that in fact EMS interest rates do not really follows German rates any more than German rates follow US rates. Indeed, it is possible that German rates might have kept following the trend established by US monetary policy.

The EMS is also supposed to have restored price stability to inflation-ridden European economies such as the French and the Italian. In the same period, however, other inflation-prone countries have recovered even more remarkably from price instability. One is tempted to think that it was Paul Volcker's dramatic monetary squeeze that quelled the inflationary fires in the United States and the rest of the world.

In terms of almost all other success indicators — that is, in terms of the relative dynamics of the key macrovariables — the EMS countries do not score particularly well in comparison with either themselves in pre-EMS years or other countries in the 1980s.

It is better, therefore, to call things by their real name and describe the EMS as a reasonably successful holding operation, concocted by the political authorities of the two leading EEC countries in order to maintain the delicate political and economic balance in Europe during a period of world turbulence — turbulence caused by the painful transition of the United States from the inflation of the Vietnam War to a peacetime world economy in which it was neces-

sary to accomodate the new Japanese industrial power, which the Vietnam War had done much to create.

Although the EMS can be regarded as a successful holding operation, two important questions remain: 1) how much did that success depend on the US macroeconomic policy mix in the 1980s?; 2) what were the costs of the operation for Europe and for the rest of the world?

It is obvious that had the United States not stumbled upon a policy mix that induced a violent and heavy appreciation of the dollar, the EMS countries would have had a pretty horrible time. Counterfactual history is generally considered to be pointless; nevertheless, it is true that the Europeans could not have imagined, even in their wildest dreams, that they would be steered to a safe haven by two such *dei ex machina* as Paul Volcker and Ronald Reagan. Not every country is willing, we have just seen how Germany was not willing, to get rid oı a large part of its industrial capacity and to transform a good portion of its youth into a cohort of service workers — all of which the United States accomplished in less than two decades. Had the dollar not hit the roof, the members of the EMS would have had to engage in beggar-thy-neighbour policies against one another, since in that case the giant US market would have not been thrown open to them, Japan, and the newly industrializing countries. We can reasonably doubt that with a lower dollar Italian and French economic authorities, industrialists and workers would have shown the olympian equanimity that they did shows when their currencies were overvalued vis-à-vis the mark. Moreover, for the reasons I gave above, greater exchange rate instability in Europe would have have compelled the EMS countries to radically modify the CAP. The depreciation of the dollar since 1985 could be accepted because of the previous bonanza. European firms stuck as firmly as they could to their shares of the US market even if it meant reduced profits, in order to maintain economies of scale effects at work. Recently, the have also benefited from a higher rate of domestic growth in Europe, which has allowed then to replace US sales with domestic ones. It must not be forgotten, moreover, that US imports have continued to rise. It will be interesting to see what happens when the US economic authorities decide to allow the US economy to deflate.

The costs of the EMS must not to be overlooked either. First of all, in order to have their respective real exchange rates appreciate vis-à-vis the mark, France and Italy have been obliged to maintain tight controls over their foreign exchange markets. If it is true that foreign exchange controls generate distortion, then distortions arising from this cause have occurred in these two countries.

It is also possible that the renunciation of the use of seignorage by the Italian and French authorities has obliged them to increase domestic public debt. Although the delicate balance that the CAP guarantees to status quo politics in Europe is treasured by those who benefit from it, it is not clear whether the taxpayer would agree that the cost is worth paying.

The EMS has also fostered the accumulation of trade imbalances in Europe — that is, of German trade surpluses with other EMS members, which can be tolerated in the long run only if the EEC makes a drastic leap toward complete economic integration. This is the meaning of what is generally called "1992." Will full European economic integration be an advantage for the rest of the world economy? Some economists argue that the EMS has already destabilized the international monetary system — that the price of internal EMS stability has been more instability in the rest of the world. It is possible to argue among similar lines about the consequences of the EMS for the markets in other goods and factors. I leave the question unanswered, but I feel that it should be asked.

Which of its predecessors in the realm of international monetary regimes des the EMS most resemble? This is the question I had in mind when I started this paper. It was necessary to describe the beast at length in order to be able to compare it with other beasts. If I could rely on a consensus of opinion about what those other regimes were like and how they actually worked, I would now be in a position to undertake this comparison confidently. However, no such consensus exists. There are theoretical models of the gold standard and of the gold exchange standard, but I do not think I can use them for my purpose. However, many people are convinced that they do fairly represent historical reality, so I shall not be able to ignore them either.

The EMS is clearly a subsystem, a part of a large international monetary systems (IMS). This was not true of the Bretton Woods

system, from which only the socialist countries were excluded. Does the Bretton Woods system still exist? Not in its original form certainly, but a modified version of it is still with us. This latter-day version of Bretton Woods resembles the IMS as it existed in the second half of the nineteenth century and until the First World War. The international gold standard was only one of several elements of the IMS of those days. There was also an important silver standard, comprising tackward countries such as China and India. The adherents of bimetallism included the Latin Monetary Union countries and for a times the United States. Finally, a large chunk of the IMS consisted of inconvertible currencies.

A currency that was based on a metallic reserve — or better, one that consisted wholly of metallic coins — would fulfil the old dream of constitutionalizing the monetary sovereignty of the state, of making money respect the same laws of production and distribution, supply and demand, the govern other commodities. If monetary sovereignty is strongly resented, it is because it is often abused. Monetary subjects will try to become monetary free citizens by adopting a metallic standard. They will opt agains what they consider to be an iniquitous state policy and for the free market behaviour of precious metals production.

In historical reality, metallic coins represented total or almost total monetary circulation for a very long time indeed. It does not follow, however, that these systems were not managed or not subject to sovereignty. It was possible, in various artful ways, to make mint pars and market prices diverge and this practice was the basis of most monetary policy of those days. After the Bank of England assumed the task of keeping the metallic reserve of the whole country, and bank money largely replaced metallic circulation in England, other countries were moved to imitate a policy that seemed to be one of the cause of British economic success. In these countries, as in Britain, the creation of metallic reserves was seen as a way of managing money and preventing market forces from operating freely. The gold standard and bimetallism were therefore two alternative ways of introducing centralized national systems of monetary management. The gold standard countries believed that the price of silver ought to float freely. The bimetallist countries believed that pegging silver to

gold (with an adjustable peg) would be more reasonable, since for historical reasons both metals were important circulation media for their economies and gold, even when its price declined in relation to the price of silver, was always a much more expensive currency medium for a country without a developed deposit banking system. Gold was a good asset rather than a good circulation medium.

The market prices of gold and silver oscillated strongly for the best part of the nineteenth century. These oscillations, and the threat they posed to real and financial integration, were the origin of the Latin Monetary Union, which was formed by international treaty in 1865. The countries that formed it, France, Italy, Belgium, and Switzerland, had been united under the First Empire. After its dissolution, they kept the bimetallic system that France had adopted as far back as 1785, and that Napoleon had extended to the others. The four countries also enjoyed a remarkable level of real and financial integration. The center of the area was France, and the Banque de France functioned as lender of last resort for other banks of issue in the area France was also the main foreign market for the other three countries and usually ran a large trade, deficit with them; it also exported long-term capital to them, and collected short-term capital from them.

When silver-gold market parity began to oscillate violently in the early 1860s, as a result of US gold exports to pay for the Civil War, the four countries all reduced the silver content of their coins; the intention was to prevent the export of coinage and hence a dangerous shrinkage in the amount of coinage in circulation. Each of the four, however, chose a different silver content. The ensuing arbitrage wrought havoc in the markets and endangered the existing economic integration of the four countries. This threat brought them together in a very extensive monetary union whose purpose was to maintain the monetary intercirculation and economic integration that already existed. France hoped that the bimetallic system would eventually include other countries as well. The Latin Union had a chequered existence, but it lasted until 1928. In the eyes of contemporary observers, the bimetallist bloc was an essential feature of the pre-1914 IMS, and it is possible to argue that its weakening, precipitated by the heavy fall of silver prices from 1875 onward, greatly unbalanced the functioning of the IMS. When the Latin Union countries had to close

their mints to silver coinage the Gold Standard bloc was reduced to dumping its silver production in India and China. In a world where banking was underdeveloped and subject to dreadful instability, it was only the discovery of gold in South Africa that reduced the deflationary impact of the enlargement of the Gold Standard Bloc.

It is more reasonable, I think, to compare the EMS to the Latin Union that to either the gold standard bloc or Bretton Woods. Like the EMS, the Latin Union was formed by international treaty, was an attempt to preserve existing economic and financial integration against an exogenous problem (the vagaries of gold-silver parity), included few countries, and had a core country. Here the parallel stops, however, since France and its central bank were a better centre for the Latin Union than Germany and the Bundesbank have been for the EMS. The Banque de France was the lender of last resort for the whole Union, whereas the Bundesbank has refused to be anyone's lender of last resort. Moreover, the France of the Latin Union, unlike the Germany of the EMS, ran a deficit with the rest of its group of nations.

Above all, the evocation of the Latin Union from historical oblivion puts the EMS into a more limited and realistic perspective.

As I have noted, both the apostles of the Gold Standard and those of international bimetallism regarded the division of the pre-1914 IMS into two camps as a great misfurtune. These two very opinionated and universalistic monetary schools filled the second half of the nineteenth century with their heated debates and their inspired propaganda. International conferences were organized with a view to converting the most important countries to bimetallism. The supporters of gold believed with equal force that gold was the metal of the future since it was more precious than silver, a smaller quantity could express large values thus it was better able to accomodate the growth in the value of transactions that came as a result of economic development.

Other observers, however, pointed out that the countries that had chosen the "strong currency option" after silver started its precipitous fall in the 1870s had been able to do it essentially because other countries had stuck to silver or to bimetallism. It was the exisence of a second, and weaker, monetary metal that allowed countries to express their monetary virtue without being propelled into transform-

ing it into a strong deflationary bias for themselves and the whole world economy. Had all countries chosen gold, even the South African mines might not have generated enough liquidity to keep the world economy on a non-deflationary path.

The persistence of the silver standard and bimetallism allowed the deflation-inclined countries to have what they wanted without breaking the whole IMS. Had all countries gone onto gold, the resulting deflation would probably have compelled most of them to go off it again in a very short time. A strong curency presupposes a weak one.

The EMS, like the Latin Monetary Union, has allowed the centre country to solve its monetary problems. The Latin Union countries did not really want to have silver as the numéraire: they believed gold was a safer bet, since its price at the time was low relative to that of silver. But France had a huge silver circulation and the Banque de France a huge silver reserve. Had the union been started on gold, both would have been substantially depreciated. The Latin Union countries did however have the possibility of using the Banque de France to rediscount when the gold part of the IMS of the time expressed its deflationary tendencies or when a banking crisis arose. It must be remebered, in fact, that in the gold countries, banks created the currency that replaced silver as the main part of the money in circulation. And banks multipliers had in those days an inclination to expand and contract suddenly and traumatically, producing violent shocks to interest rates that spread to silver countries and that the Bank of France's rediscounting facilities served to moderate somewhat as far as the Latin Union countries were concerned.

The Latin Union, however, was not without its internal problems. The Italians in particular, oscillated between trying to achieve more monetary and financial independence from France and enjoying the advantages of extensive integration with the French economy. When, in 1882, they joined the Triple Alliance, the French resorted to a financial warfare against them that they carried on for more than 10 years, effectively sinking the Italian attempt to return to full convertibility with a loan negotiated mainly with British banks.

The problem with financial liberalization is that it encourages strong countries to use international financial flows as instruments of

power politics. This certainly happened before 1914. It was widely deprecated by contemporary observers, who noted that such behaviour greatly increased the instability of the IMS (1). Now that both France and Italy have liberalized capital flows and are experiencing a great inflow of German funds, encouraged by exchange rate stability in Europe and by interest differentials, it is possible that we shall again see the use of holdings of foreign financial assets as political instruments, Indeed I am afraid that this outcome is almost inevitable unless Europe achieves political unification, in the form of a federation of the EEC countries. If this does not happen, the experience of the Latin Union is there to admonish us that economic integration can be substantially reduced if it is not accompanied by political union. Italy and France did not abrogate the Latin Union during their decade of economic warfare, which drastically reduced their economic integration. And the Italians were not interested in returning to normal economic relations with France until they had bought back almost all of their foreign-held national debt, which was largely in French hands. The old links were not re-established until the first decade of the twentieth century.

(1) As is well known, Luigi Luzzatti came to promote an international monetary agreement that included a clause according to which the recycling of international short-term capital between banks was to be compulsory.

As can be easily imagined, the proposal put forward by Luttazzi met the general approval of the public opinion, but was not actually brought about.

Policy Coordination in Europe

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1. - Some Thoughts on Worldwide Issues

The world at large is presently faced with a unique combination of challenges. Perestroika and glasnost are questioning the concept of the East-West confrontation. The growth of trade is unsettling the GATT concept of the most-favoured-action approach. The debt problem of the less developed countries (LDCs) continues to upset the world financial order. Environmental issues, worldwide in their implications, assert themselves with vigour.

Although these challenges demand forceful action, the industrial countries are anything but unanimous in their views on how to address them. Macro — and micro-misalignments prevail in the industrial countries and keep the academic, business, and political elites busy, so that the more important subjects go unattacked. Japanese and Europeans suggest that the twin US deficits are the chief obstacle to better-balanced development. The United States argues that Japan and Germay enjoy a free-rider position: by guaranteeing their military security, the United States allows them to serve on defence; by creating excess world demand, it has provided them with a rich opportunity to promote export industries.

The latter view of the present state of the world economy is widely held on the East Coast of the United States, whereas the criticism of the United States is largely confined to financial circles, particularly in Japan and Europe. Without doubt, some of the criticism on both sides is well founded. It is wrong, however, to argue

that the current account deficits and surpluses that have developed in recent years are (solely) a reflection of unsustainable disequilibria. A number of other arguments — some of which are not virtually exclusive — can be put forward to explain the existence of deficits and surpluses: 1) some deficits reflect an effort by certain regions and nations to catch up with the more developed parts of the industrial world. Spain and Portugal are examples; in a world in which the less developed countries have lost their creditworthiness, some deficits reflect a second-best solution; namely, the direction of capital flows to the industrial nations that are "youngest" in terms of long-term age composition and population dynamics. The United States is the primary example in this category; some deficits reflect a response to supply-side policies that have enhanced the profitability of investment (tax reduction, privatization, deregulation). By adopting courageous supply-side measures, certain countries have made themselves more attractive as locations for productive investment. Owing to the income effects associated with these measures, the countries in question have increased not only their capital imports but their imports in general. An obvious case at present is the United Kingdom; 2) some surpluses reflect a failure to improve economic incentives as much as other countries have (1) or even an unthinking creation of new disincentives. The withholding tax in Germany, for example. The resultant outflow of capital depresses the exchange rate and serves — at least temporarily — to increase the export surplus; 3) some surpluses reflect an enhanced productive potential combined with a "natural" weakness of demand dynamics. A situation of this kind emerges when a substantially increased labour force has been fully educated and population stops growing, as it has in Europe at present. A reversal of this tendency is in the pipeline, partly as a consequence of unexpected immigration (for example the inflow of ethnic Germans to the Federal Republic) and partly as a consequence of a strongly enhanced propensity to spend (for consumer durables and housing) among the numerous "younger generations", whose population share in Europe is larger today than it has been at any other time during the post-war

(1) The OECD notes this failure in the case of economic policy in Germany (OECD [5]).

Advise: the numbers in square brackets refer to the Bibliography in the appendix.

period; 4) some surpluses are the consequence of deliberate decisions by economic agents who live in countries faced with a greying population. These countries tend to invest in regions, firms, and countries that promise to be dynamic for an extended period. This tendency probably plays an important role in Japan, which is facing its greying earlier than the other industrial nations. A high level of savings and investment abroad is but a "natural" reaction for a country in this situation.

2. - The European Issues at Present EC 1992: the Focal Point

Western Europe, which borders on the East, participates in NATO, and is fully integrated into the West, has begun to develop its own momentum. Although the creation of the European Monetary System (EMS) was probably a reaction to the US dollar's loss of its proper function as an anchor for the world currency order, the *Single European Act* was a genuinely European development. Europe has overcome its phase of "Europessimsm" and "Eurosclerosis." It is determined to open its own internal borders, harmonize fully its divergent standards and norms, reduce its diversity in indirect taxation, and permit Europe-wide public procurement. This encompassing program for deregulation is not only a fitness program for European business, but also a convincing program for political progress in dealing with distribution coalitions (Mancur Olson). Although no political body in the individual European nation-states is in a position to challenge, much less seriously weaken, the lobby groups (farmers, miners/mining, the energy industry, steel), the European Commission or the European Court (2) can successfully dismantle protection and reduce subsidies. Thus the European Community (EC) can supply Europe with "competition" as a pubic good. National politicians can "blame" the European level of administration for enforcing unwelcome policy measures.

The 1980s will be described in history books as a decade of low growth, insufficient investment activity, and, above all, unacceptably

(2) See the far-reaching *Cassis de Dijon* [1].

high levels of unemployment. Although the decade started with the "uncharming" effects of the second oil price explosion, it did not exhibit the "unholy" macroeconomic policy adjustments that took place after the first oil price hike. Indeed, a *U*-turn in economic policies occurred. Monetary policy moved into an anti-inflationary position, irrespective of potential costs in terms of lost (short-term) growth. This tendency in Europe was substantiated by similar moves in US monetary policy (such as the Volcker decision of October 1979) and the Japanese decision to not accommodate the second oil price shock. What is more important, however, the ambition to fine-tune economic development by deficit spending came to an end.

Discretionary demand-management policies lost public support as a consequence of ever-increasing public deficits. Supply-side policies long favoured by economists began to dominate policy making. The United Kingdom was the forerenner in this regard, and the United States followed after 1981. The continental EC countries embarked upon supply-side policies later and more hesitantly. France even took an extra demand-management loop after François Mitterand's election and embarked upon a socialist program. Once its failure was obvious even to socialists, however, Europe moved ahead with a market-oriented approach. Thus a European consensus emerged that a policy of revitalization was crucial and should be adhered to.

3. - A Basic Institutional Framework for Policy

In the years since the Treaty of Rome, the EC Commission and the EC Council have taken over a number of responsibilities from national governments, especially in the area of trade policy. During the 1960s — the heyday of demand management — the coordination of monetary and fiscal policies was discussed in great detail.

3.1 *Monetary Policy*

The *Werner Report*, issued at the turn to the 1970s, embodied the first attempt to form a European economic and monetary union. The

Report developed a number of instruments for monetary and fiscal policy and established an institutional framework for consultation. However, owing to the breakdown of Bretton Woods an other perceived failures of economic policy structure, the report received only lukewarm response and proved difficult to implement. Neither the European snake nor — the "wurm" — two predecessors of the EMS — fulfilled the expectations of Europeans who had hoped for an institutional breakthrough.

The foundations of the present institutional framework were laid in 1978. The EMS, opposed by many market-oriented economists and the Bundesbank alike — they were suspicious of a system that reduced sanctions against inflationary policies — proved in practice to work, and work successfully, in favour of anti-inflation policies. The Bundesbank dominated the system, and the Deutschemark was effectively established as an anchor. Policies became more and more coherent, a development that helped to prevent realignments within the system. When realignments were necessary, they were far from being drastic enough to trigger massive speculative moves. Changes in parities have more and more often been only "intra-marginal." Recently, cost and price differentials have been limited to such a degree that realignment has been avoided for a period of two and a half years. According to market sentiments, no realignment is pending either.

It was long argued that only the massive appreciation of the US dollar in the first half of the 1980s made adherence to the Bundesbank's restrictive policies possible, since only with the help of increasing net exports could the European economies reduce internal inflation without suffering from too much output restraint. Yet, after 1985, when the dollar dropped, the dominance of the Bundesbank remained unchallenged. Thus when the Bundesbank tightened its anti-inflationary reign recently by increasing the discount and lombard rate for the third time since last autumn, most EMS partners immediately followed suit.

The Bundesbank's policy is obviously considered to be not only acceptable, but even optimal. Pursuit of a sustained policy of orientation to the mark has developed in financial markets credibility for reduced exchange rate risk, which has made it possible to reduce the

interest rate differential between formerly weak currencies and the mark. This outcome has been particularly pronuonced recently in the case of the French franc.

Thus monetary policy coordination in Europe has been settled, more or less. (3) The Bundesbank is accepted as the ultimate arbiter of the policies to be pursued. The only important European currency that does not belong to this system is the pound. Although Nigel Lawson effectively fixed the pound to the mark in 1987-1988, Margaret Thatcher opted at a critical point in 1988 for an independent course, — that is, a more restrictive one — in order to keep UK inflation in check.

The *Delors Report*, published in April 1989, fully accords with recent experience. It calls for a theree-stage monetary unification in Europe. Stage one would complete the EMS by adding the currencies presently out of the system and by limiting the margins to 2,25%. The basic instrument required for the enhancement of monetary policy coordination is full liberalization of capital flows in Europe. This step is scheduled for 1990, although Spain, Portugal, and Greece will be allowed a longer transition period. Stage one would also involve improvements in the process of consultation among the national central banks.

In the second stage, the first institutional arrangements for a common monetary and currency policy would be made. A reserve pool and joint foreign exchange market interventions are considered to be meaningful first steps toward a common monetary policy. In addition, monetary targets would be formulated.

The third and final stage would see the establishment of a federal reserve bank of Europe. Its board would consist of the presidents of the national central banks plus a number of members designated by the EC Council for a long tenure; this arrangement would ensure the political autonomy of the European central bank. The primary function of the bank would be to preserve price stability. To this effect, the bank would not be allowed to finance public sector deficits. The federal reserve bank would report annually to the EC Council and the European Parliament.

(3) On the question of international monetary coordination and the problem of choosing targets, see WILLIAMSON [8].

The main elements of the proposed European institutional set-up for monetary policy are not unlike those of the Bundesbank or the US Federal Reserve. The political chances for this solution are relatively good. France and Germany will be especially supportive. The true obstacle is the United Kingdom, which is still convinced that an institutional solution can help to stabilize long-run market expectations and thus reduce the long-run costs of stabilization policies.

3.2 *Economic Policy*

The economic policy paradigm in Europe is certainly different from what it was 15 years ago. On the other hand, it would be an exaggeration to say that supply-side policies have replaced, in a number of countries, demand management. The persistence of strong tendencies toward industrial policies is evidence of limited confidence in market forces. Tax reductions and the dismantling of regulations and subsidies, however, are hints that governments have come to accept that their ability to steer certain processes is limited. The economic policy paradigm is best described as being in transition OECD [6].

In any case, no simplistic theoretical concept has a chance of forming a basis for cooperation, let alone for the construction of common policies. These days not every country with a budget surplus is criticized for pursuing a beggar-thy-neighbour policy. Obviously the Undited Kingdom's budget surplus does not lead to a dampening of overall demand or to current account surpluses. In practice, at any rate, the demand for fiscal cooperation has been reduced in scope. For the most part, it does not extend beyond an expectation that a country with an excessive government sector will enhance its incentive system by reducing that sector — that is, by reducing government expenditures and taxes. The only coordination asked for in this long-run effort to reduce state intervention to an acceptable level is in the timing of necessary measures: in setting policy, individual countries are expected to take the cyclical position of the economy into account.

However, recent forecasting failures (such as everyone's expectation of a recession after the 1987 stock market crash) have called into

question the necessity of even this limited measure of coordination. For example, the increase in excise taxes in Germany in 1989 — originally aimed at reducing the government deficit in the course of a larger income tax reform process in three stages (1986, 1988, and 1990) — was considered cyclically ill-timed for 1989, since a slowdown was expected. Surprisingly, however, the European economy was healthy and vigorous during the first half of 1989. Thus criticism of policies on the basis of cyclical consideration, so plausible until recently, has proved to be groundless.

In the *Delors Report* on European economic and monetary integration, monetary experts stress the need for a more encompassing economic policy convergence as a prerequisite for any successful attempt at full integration. In the course of this argument, they put forward a number of "old-fashioned" proposals for demand management coordination. The repeated mention in the *Report* of regional and structural policies to enhance the process of economic integration leads one to expect some revival of technocratic coordination efforts designed to strengthen "Economocracy" (Okonomokratie), as Wilhelm Ropke (1958) called it 30 years ago. Similarly, there are hints about pan-European industrial and technological programs. This point of view is frequently advanced by the "Roman" groups with the European Community. Strong opposition comes from Margaret Thatcher. Germany, long a stronghold of the market approach, continues to speak to that effect but fails to act consistently.

The EC Commission (with a few exceptions) and, to an even greater extent, the European Court are presently the strongholds of a market-oriented approach in Europe. This holds true for a number of issues, certainly for trade policies (see the second directive on bank regulations, where for practical purposes reciprocity has been given up as a concept).

A very concrete obstacle to the coordination of policies in Europe has emerged in connection with the issue of the harmonization of indirect taxation. Although some observers (such as Margaret Thatcher and Herbert Giersch) argue that national sovereignty must prevail and that markets should be left to search for the optimal solution, the EC Commission has opted for harmonizing indirect taxes.

If one changes from a system of segmented markets (border controls and limited freedom to trade and transfer capital) to a free market and yet taxation continues to vary from country to country, the obvious result is "distorted" trade. One does not need the system of discovery called the market to find this out. What amounts to making capital obsolete would be avoided, however if taxes were harmonized in conjunction with the dismantling to physical borders. Otherwise the low-tax countries might be misled into propping up investment, and the high-tax countries into disinvestment. If this were done, then the second round (the "correction" of capital investment) could be avoided as well as the first («market-induced» tax harmonization). In short, all participants would be better off if tax policies were coordinated in advance.

Excise taxes should differ from country to country only if transport costs are high enough to avoid trade distortions. Value-added taxes should not be further apart than transport costs and other "natural" market imperfections allow.

Since islands — the United Kingdom, for example — are better "protected" naturally than other places, the EC Commissions proposals in this regard should not be too narrow. But countries that share a border should be advised to bring their tax rates into even closer harmony that the commission recommends in its present proposals.

Debates like the one about indirect taxation indicate that Europe has moved away from the fine-tuning of demand mangement policies and is now addressing the more important question of the "rules of the game" policies called *Ordnungspolitik* in Germany.

Can Europe live with its disequilibria?

a) The shift toward the more fundamental issues of policy coordination occurs at a time when inflation rates are converging on the relatively low German levels; *b)* unemployment rates remain relatively high, despite some reduction recently; *c)* current account disequilibria within Europe are widening, and growth rates — after being extremely low during the first half of the 1980s — are recovering surprisingly well.

Many outside observers view this combination of circumstances as unacceptable and unsustainable. Consequently they expect (or

recommend) a dramatic correction of exchange rates and other policy variables (4). Although developments of this kind are certainly a possibility, they are hardly the only option.

First of all, the above description of the economic situation in Europe is, of course, a snapshot of European economy in transition. Many of the supply-side measures adopted in Europe have begun to work, but they are far from having had their full impact. The EC 1992 program has just begun to exert its stimulative effect on investment activity. The changes in the demographic profile, which have so far kept unemployment high, are now helping to reduce it. (Growth of the labour force will decelerate in the coming years. Shortages of labour inclines business to hire in advance and to provide training rather than complain about the lack of skills in the market. Thus even long-term unemployment will tend to decline).

Whether European current account deficits will decline over the next year is an open question. Although a cooling-off of the UK economy and a possible weakening of the pound may help to diminish the UK's high current account deficit, most other countries' imbalances will probably not change for quite some time. The basis for this judgment is the existence of strong voluntary capital flows into the current account deficit countries, most of which have excellent growth prospects in the unified European market. This is particularly true of Spain and Portugal. To some extent, the United Kingdom continues to be attractive for the same reason. Germany will remain for some years the "natural" choice for the surplus country, exporting capital goods, finance, and to some extent stability, since the mark is the anchor within the EMS; that is, the currency that does not adjust to inflation differentials, which though declining still exist.

The higher the share of direct investment or private capital flows attracted by high yields, the more stable such a situation will be. (5) As to the latter, this argument might be a circular one. It will be validated only if the borrowers in the debtor countries eventually "earn" the

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(4) In regard to the presumed need of the European surplus countries to adjust their exchange rates vis a vis the United States, see INSTITUTE FOR INTERNATIONAL ECONOMICS [4], and *Amex Bank Review*, n. 4, 1989.

(5) This point applies as well to the financing of the US current account deficit; see GERMAN COUNCIL OF EXPERTS [3].

high yields. Otherwise a correction of policies is bound to follow, a consequence that will frustrate present expectations in the financial markets; high interest yields will then be (over) compensated by depreciation. Although this outcome is a distinct possibility, it ha been frustrated in recent years. Thus the alternative, a continued dynamic disequilibrium of the type mentioned above, is at least as probable.

Europe at large does not pose a macroeconomic adjustment problem to the world. Its current account is balanced, its growth substantial, and its price development moderate. (6) The fact that its unemployment is still high should not bother other countries, since unemployment benefits are financed at home. The outside world would be at risk only if Europe developed into a fortress and gave up its free trade policies. GATT negotiations should be used to avoid this outcome.

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(6) For the adjustment policy of the community, see EUROPEAN ECONOMIC COMMUNITY [2].

BIBLIOGRAPHY

[1] CASSIS DE DIJON: *Decision of the European Court*, 20 February, 1979.

[2] EUROPEAN ECONOMIC COMMUNITY: *Annual Economic Report* 1988.

[3] GERMAN COUNCIL OF EXPERTS: *Annual Economic Report*, 1988.

[4] INSTITUTE FOR INTERNATIONAL ECONOMIC: *American Trade Adjustment: The Global Impact*, Washington (DC), The Institute for International Economic, 1989.

[5] ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT: *Economic Surveys: Germany*, Paris, OECD, 1988.

[6] — - — : *Economics in Transition: Structural Adjustment in Oecd Countries*, Paris, OECD, 1989.

[7] ROPKE W.: *Jenseits von Angebot und Nachfrage*. Bern, Paul Haupt., 1979.

[8] WILLIAMSON J.: *Targets and Indicators: A Blueprint for the International Coordination of Economic Policy*, Washington (DC), Institute for International Economic, 1987.

Ten Reasons to Fear Fortress Europe

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Assume for the moment that the European Community (EC) is about to realize its old dream of creating a single economic space, unhampered by frontiers, that runs from Denmark to Portugal, from Ireland to Greece, from Germany to Gibraltar — a space that encompasses 12 countries, 11 currencies, 9 languages, and 320 million people. What is the likelihood that this unit will turn in upon itself?

The question is worth asking because of the sheer size of the unit: it tends to be other countries' largest, or second largest, trade partner. And it is worth asking because there is a high level of uncertainty (not necessarily diminished by what follows) about the answer. Three years away from the magic date of December 31, 1992, the community itself does not know. Because of the complex composition of the EC, which comprises both free-traders and protectionists, the outcome is bound to be in balance, and the EC has been unable so far to give a clear reply one way or the other. What follows will be in the nature of a check-list of items to reflect upon.

1. - The Official Position

For the community, it is "business as usual" as far as its external trade policy is concerned. It sees the consolidation of external commercial policies to non-tariff barriers as a simplification, an undertaking not different in nature from the earlier consolidation of

national tariffs in a single Common External Tariff schedule. That the new undertaking may lead to trade diversion detrimental to third-country interests is not officially acknowledged; the general agreement on tariffs and trade (GATT) makes no provision for compensation for any loss of market access that may result from initiatives of this kind.

Not only is access to the EC market to be simplified, but once goods are inside they can expect to be given "national treatment"; that is, they can circulate as freely as EC goods. Outsiders, according to the official EC view, will therefore benefit from 1992 almost as much as insiders will. The single market project is a massive program of deregulation aimed almost entirely at sweeping any *internal* inefficiencies. Its consummation will result, unambiguously, in a world-wide rise in welfare; everyone will benefit.

In areas not covered by GATT, or only imperfectly circumscribed (services, public procurement, mutual recognition of standrds certificates and perhaps even of standards themselves), the EC has declared itself ready to negotiate with its trade partners on the basis of reciprocity.

What more do people want? Are we not participating actively in the *Uruguay Round*? There is a certain air of injured innocence in the EC's rare pronouncements.

So why do outsiders persist in their skepticism?

2. - Ten Reasons Why Outsiders Remain Unconvinced (*)

2.1 *Expansion of the EC to Include Notoriously Protectionist Countries*

It is no secret that Spain, Greece, and Portugal have an uninterrupted tradition of protection, corporatism, and state intervention. Had Spain and Portugal been EC members in 1985, it is most unlikely that the single market project would ever have been adopted. As it is,

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(*) For inspiration (and confirmation) in costructing this list, I have found HENDERSON [1] and TOVIAS [3] to be extremely useful.

Advise: the numbers in square brackets refer to the Bibliography in the appendix.

it is southern Europe's fear of the painful effects of competition on its antiquated and inefficient industry that gives rise to the fairly widespread notion that doing away with internal frontiers *implies* reinforcing the external ones, in order to buy these countries off.

Be this as it may, the new southern members must find 1992 rather more than they had bargained for when they applied to join in 1976, and one will certainly not find them arguing on the side of freer trade. Given the EC's new decision-making process, the protectionist elements within the EC will at all times be able to muster a blocking minority and may often be able to form an active majority.

2.2 *Trade Diversion*

The sheer size of the EC means that part of the cost of trade diversion is likely to be passed on to third countries via a deterioration in their terms of trade. And this deterioration will apply not just to what remains of their trade with the EC, but to trade with the rest of the world as well. Note that trade diversion will occur even if the average rate of (non-tariff) protection does not change, and even if it *diminishes* as a result of the *Uruguay Round*. It is simply an inevitable part of creating a customs union. However, this inevitability does not make it any easier for non-members to bear.

Furthermore, the consolidation of non-tariff barriers such as individual quotas on Japanese automobiles into a single EC quota, or individual voluntary export restraints (VERs) into a single EC-VER, raises the spectre of the EC's using its monopoly power to extract much better terms from its victims than it could when these matters were left to member states to decide individually.

It is incidentally interesting to note that a consolidation that simply takes an average of existing restrictions may well end up being more protectionist than were the dispersed restrictions in place before consolidation. The reason is that in a free trade area the highly protected, high-price-level market attracts imports from the low tariff, low-price-level partner country until there is no further price differential between them (law of one price). In the low-price country, producers may even shift 100% of their output to the high-priced market: local demand can always be met by imports from the rest of

the world. In essence, in a free trade area (or a customs union with individualistic non-tariff barriers), the highly protectionist countries feel the wind of competition indirectly. For example, France may restrict Japanese automobiles to 3% of its market, but it has to take in as many Volkswagens as Germany can produce — and the Volkswagens have to meet Japanese competition in Germany without (much) protective clothing. They are therefore close to world-level competitiveness, and Renault has to meet this standrd in order to survive. However, by restricting Japanese automobiles by the same amount everywhere, protection will rise in Germany and fall in France. Volkswagen will be able to relax and so will Renault.

2.3 *The EC's Past and Current Behaviour with Regard to Agriculture*

The single market project obviously includes agricultural goods and indeed requires a major reform of the Common Agricultural Policy (CAP) in order to phase out the notorius Monetary Compensation Amounts that are paid, collected, or both at frontiers between member states. Also, a good quarter of the 300-odd measures that need to be taken in order to realize the single market refer to veterinary and phytosanitary regulations and controls. In the field of agricultural trade, however, the real threat to outsiders comes less from the single market than from the community's expansion to include Spain, Greece, and Portugal.

The EC's record on agriculture speaks for itself: variable levies, guaranteed prices, export subsidies, community preference — all help to provide a watertight market for the benefit of its members' farmers. This system is now to be extended (with some modification, it is true) to the South. The transition period for Mediterranean-type agricultural products will end by the mid-1990s, by which time Spain in particular will have had time to expand output to meet all expected future demand. From being a net importer of these products, the community is almost bound to reach self-sufficiency and may even repeat its amazing performance with respect to temperate-zone products by becoming a net exporter of warm-climate fruit and vegetables as well. North Africa, the southern United States, and sub-

tropical developing areas will find it increasingly difficult to achieve access to the European market in any but a very artificial way. The community has already offered a number of "preferred" countries (see point five below) tariff-free quotas based on their 1980-1984 average export performance in perpetuity, thus guaranteeing to its own producers all future growth in the market (as is only right and proper in a single market) and ensuring that both its domestic and international trade is neatly cartelized (as is only logical for such a sensitive sector). After all, one cannot sit back idly when French farmers spill eight tons of Spanish strawberries on the A7 motorway.

2.4 *The EC's Past and Current Reputation in Dealing with "Sensitive" Manufactured Goods*

To make third countries bear at least part of the burden of coping with such situations is by now an ingrained habit with many member states. Once a product is designated as "sensitive," all rational thought is suspended: it becomes sacred. Exactly how a product achieves this special status is, in Europe, largely shrouded in mystery. We do not have North America's open public debate on trade policy. However, the facts are there. The member states of the EC, and sometimes the EC as a unit, make frequent use of VERs, and not just in textiles either. For instance, Boonekamp has determined that of a total of 99 non-MFA VERs, the community is responsible for 53. This suggests that the community's free and open market is a fair-weather affair. Markets remain open as long as the prices and quantities are "right." The minute they are "wrong" the product becomes "sensitive," and the VERs appear in due course, sometimes after the product has spent a short period on the list of products under antidumping investigation (see point 2.6 below). This means that VERs not only cartelize the markets to which they apply directly but may also have the effect of cartelizing those to which they apply only potentially. "Self-discipline" must be exercised on all fronts if one is to avoid constant trouble.

All of this is well known. The trouble is that outsiders see no reason to believe that an EC transformed into a single market will behave any differently. On the contrary, they fear that the leverage applied by the 12 member states acting simultaneously would be

much more daunting than that applied by them individually (see also point two above). No amount of earnest denial on the part of officials of the Commission of European Communities manages to eradicate the community's past reputation for avoiding competition whenever it hurts.

2.5 *The Least-Favoured Nation Principle*

The community has never really taken on board the notion of a multilateral, non-discriminatory trading system. This omission is understandable, perhaps, in the case of a unit that expresses itself toward the outside world in terms of trade policy.

If one places the EC at the centre of an imaginary planetary system, the closest and most favoured satellites are clearly the European Free Trade Association (EFTA) countries, which are linked to the EC via bilateral free trade areas that cover industrial (but not agricultural) goods. Next comes Turkey, with associate status that will lead to full customs union at some unstated time in the future. Then come a dozen non-member Mediterranean countries, which are liked to the EC by a series of bilateral, often non-reciprocal agreements that cover both industrial and agricultural goods, and make generous use of that great instrument of free trade, the tariff quota. Then come the 60-odd countries of the African, Caribbean, and Pacific regions of the globe with similar links to the EC but with less capacity to exploit them. Then we have, of course, the broader nebula of countries that benefit from the General System of Preferences. After these countries comes a select group comprising the United States, Canada, Australia, and New Zealand, which are neither favoured nor actively discriminated against. One could add to the outer orbit of this group eastern Europe and the Soviet Union. Still further out, in the colder reaches of this solar system, one may discern the newly industrializing countries, frequent victims of VERs and phony antidumping investigations. Finally comes Japan, the ultimate pariah.

We are so used to this state of affairs that no one remarks upon it any more. But one may be sure that Europe of the single market will also establish a hierarchy. Indeed, the EFTA countries have been told not to worry about 1992 and North America too is assured that it has

nothing to fear — the fortress will be open to the west. We know which side our bread is buttered on, after all.

Our one-sided fortress is nonetheless a fortress, and a very effective one at that. By excluding only the most efficient and competitive products, it enjoys a quiet life while keeping up free-trading appearances. One can almost hear the disclaimer: «What! Europe a fortress? You must be joking. Look at how much we import from the United States».

2.6 *The EC's New Anti-Dumping Mechanism*

Having observed the United States' anti-dumping and countervailing duty process at work (420 cases in this decade), and realizing what a powerful tool of trade policy it could be, the community modernized its own antidumping procedures in 1984 (330 cases over the same period). Brian Hindley's detailed study of how the new procedures have been applied (Hindley [2]) shows just how arbitrary the calculation of the margin of dumping can be. Hindley finds dumping margins of 30, 40, 50, and even 70% on Japanese products such as excavators, dot-matrix printers, and electronic typewriters. Why Japanese producers should be so keen on virtually giving these goods away remains mysterious. In any case, as Hindley shows, the commission "constructs" the prices from which it calculates the dumping margin in such a way that overheads, R&D, and marketing costs are deducted from the landed import price but not from the Japanese local market price. This is why the margins are so large. Furthermore, Hindley notes, it is now "policy" not to negotiate VERs with Japan, but to go through with a full anti-dumping investigation and subsequent imposition of the appropriate duties *if* (as is not unlikely) dumping is found to exist.

2.7 *Discrimination Among Firms on the Basis of Their Head-office Locations*

The idea that all firms that are legally constituted within a member state have a right to non-discriminatory treatment has taken a few knocks lately. For example, Nissan UK has been told by France and Italy that its automobiles will be considered Japanese for the

purpose of applying the unilateral grandfather quotas imposed by these two countries. Although the commission has since ruled that cars produced by Nissan UK must be considered European because they contain "sufficient" local value-added (60%), and although France (but not Italy) has reluctantly agreed to abide by this decision, the very fact that the "Europeanness" of a product made in the community by a community subsidiary of a foreign firm should revolve around the degree of value-added is, in itself, the application of a double standard. There are a great many products, made by *European* European firms, that require substantial non-EC inputs, starting with our pride and Joy, the European Airbus. But no one is suggesting that *they* should be subjected to this discriminatory value-added scrutiny.

Only Japanese firms qualify for this special treatment. In addition, it looked for a while as though the EC intended to treat "real" European banks differently from foreign EC-resident banks. The banking directive proposed in 1988 was ambiguous in this respect: it wanted to make non-community countries "pay" for their banks' access to the big single market in terms of improved access for community banks to their markets. Since then the community has backtracked, but it still says that it intends to use its bargaining power to negotiate freer markets for services with other countries on the basis of reciprocity. This is all very well as long as the EC is successful in its endeavours. But what if it fails? What punishment will the EC inflict on its trading partners if they should fail to open *their* services markets? Presumably, discrimination of some kind within the single market against their banks; it is difficult to think of anything else. Constant references to reciprocity in this context therefore suggest a willingness to discriminate among service firms on the basis of the nationality of their principal shareholders. Discrimination of this kind flies in the face of generally accepted notions of civilized behaviour, in particular national treatment and equality before the law.

2.8 *Technical Standards*

The community's "new approach" to the harmonization of technical standards, which relies much more heavily than earlier

approaches did on the principle of mutal recognition, could become an important non-tariff barrier against third countries.

The "new approach" involves: *a)* the establishment of minimum essential requirement at the community level (basic objectives to be met by regulation); *b)* in some cases, the drawing up of more detailed specifications by industrial standards bodies; *c)* in other cases, mutual recognition and accreditation of existing (different) national standards as meeting the conditions laid down in *a)* and/or *b)*; and *d)* the mutual recognition of test certificates issued by approved standards bodies and valid throughout the community.

The question is whether products from third countries can plug into the community's certification system at any convenient point and thereby automatically receive EC-wide recognition, or whether they will have to repeat the process 12 times, as is the case (for everyone) at present. As far as this writer is aware, the community itself does not yet know the answer to this question. Clearly, it would prefer to negotiate "mutual recognition" treaties with its principal trading partners, rather than hand them the automatic right of single-point access on a platter. The EFTA countries are taking no chances. They are active participants at stage *b)* and have announced their willingness to proceed to stages *c)* and *d)* on a reciprocal basis. However, nothing has occurred to indicate how the United States or Japan plans to tackle the problem, apart from Mr. Mobascher's suggestion that he be offered an observer's seat in the EC Council of Ministers.

2.9 *Government Procurement*

Great improvements in efficiency are expected to flow from the plan to pool public sector demand by forbidding EC government purchasing agents to discriminate against competitive bids from partner countries. In fact, this plan is a cornerstone of the whole single market edifice. Industry, the commission, and the member state governments are one in believing that what stops, for instance, the European telecommunications industry from being efficient is that there are 11 producers — one for every member except Luxembourg. What stops the most efficient among them from investing in more capacity in order to reap known economies of scale is the sure

knowledge that they will be unable to sell to their next-door neighbours, even at half the price and twice the quality. So everyone remains inefficient.

Doing away with these inefficiencies may or may not propel European industry into the high-tech Nirvana of the Twenty-First century, but one thing is sure — the intention is to favour *community* firms. It is for them, not for the Americans or (heaven forbid) the Japanese, that the single market is being created. We Europeans have taken Paul Krugman's new trade theory to heart and intend to apply it to the best of our ability. Thus, although the *Uruguay Round* may well address the problem of government procurement, this writer would be prepared to bet that the community will reserve a broad swathe of hightech products as being non-negotiable, and concentrate the negotiations on opening up public sector contract for coffee cups and paper clips.

2.10 *Subsidies and Industrial Policy*

The Commission has always hankered after an industrial policy worthy of its status. Its ambition has been restrained by the member states, loath to hand over to the commission such a unique source of privilege and power. Nevertheless the realization that no single European country, not even France, could master alone the whole range of new technologies emerging from the electronics and communications revolution led in 1982 to the launch of a experimental program called ESPRIT (European Strategic Program for Research and Development in Information Technology). It started with a small budget ($30 million), but its main thrust was not money. It was to mobilize the energies of 12 of the largest community companies involved in "informatics" (plus a host of smaller companies, research institutes, and universities) to pursue jointly some 200 carefully selected "pre-competitive" R&D projects. The Commission provided the coordinating function and made sure that the agreements between firms formed under ESPRIT did not get caught by any overzealous antitrust investigation.

ESPRIT's purpose was to put Europe on the map as far as chip-making was concerned — in which it has been successful, since

we now have JESSI (Joint European Silicon Structures Initiative), which coordinates technological and manufacturing skills at a European level, although one suspects that one should not ask what European chips cost.

In 1984, a larger ESPRIT progrom was allocated US $400 million over five years, and ESPRIT III, running from 1987 to 1991, has attracted over US $2.5 billion in public funds. In the meantime, ESPRIT has been joined by BRITE (Basic Research in Industrial Technologies for Europe), RACE (Research into Advanced Communications in Europe), SPRINT (Strategic Program for Innovation and Technology Transfer), and many other programs covering R&D related to the environment, biotechnology, energy, marine resources, AIDS, satellite TV, space vehicles, and so on. A total of US $8 billion will be devoted to funding hundreds of industry-led projects under these programs on a parity basis with industry between now and 1991; and presumably a whole department has been entrusted with the task of thinking up the appropriate acronyms.

The point, of course, it that these projects are hugely popular — with the commission, with governments (now that they have got used to the idea), with industry. The Commission enjoys supervising them (who would not?), member state governments like the feeling of belonging once more to the very select group of nations that can fund and master a full range of new technologies, and industry is discovering (perhaps sometimes rediscovering) the joys of working together for a common purpose.

Furthermore, these community-led programs to beef up European R&D were joined in 1985 by President François Mitterand's *Eureka* scheme (propelled into orbit by President Reagan's Strategic Defense Initiative), which has proved even more popular with industry because it encourages European firms to collaborate on using the high-tech they have developed under the first lot of programs to produce actual goods and services. Although not strictly speaking a community program (it includes the EFTA and Turkey), *Eureka* is a logical extension of the EC's undertakings.

The next logical extension would be to develop an overall framework into which to fit all of these programs — that is, an industrial *strategy*. In short, the single market is almost bound to give

birth to a kind of European MITI à la Japonaise by the middle or the next decade.

Let it be said immediately that this is no more and no less than what the EC's main competitors have done in the past or plan to do in the future. But that is not the point. The trouble with Europe's love affair with industrial policy is that one does not transform a rather backward, slow-moving, high-cost industrial structure into a set of lean and mean firms by letting them pool ideas and resources. So the likelihood of getting high-quality, low-cost, and competitive products out of the system is rather slight. Instead, we shall produce goods and services that will ask for *and get* (temporary) protection. It would scarcely do to throw all that money down the drain, would it?

And indeed, is not a large domestic market, some initial help from government to overcome capital market skepticism (known as market failure), and temporary protection from established outside producers exactly what the new trade theorists prescribe? Perhaps it will work, but in any event we must be prepared for complaints from US high-tech firms that they are being deprived of their rightful European markets. It will be the Airbus dispute multiplied many times over.

But all is not necessarily bleak. As a counterweight to what has gone before, one can cite the following:

3. - Five Reasos of Optimism

3.1 - The *Uruguay Round* may be successful in reducing tariffs and non-tariff barriers, in reducing support for agriculture and in liberalizing services. In fact, a successful *Uruguay Round* would be the best possible deterrent to the erection of Fortress Europe.

3.2 - The single market, if it is to be successful, will be obliged to be universal — that is, if internal frontiers go, they will go at least for all community goods and services and in part (subject to the doubts expressed above) for non-community goods and services too. If, on balance, the process does produce more trade creation than trade

diversion, the EC industry should emerge from its restructuring more efficient than it was when it went in and perhaps less inclined to shout for protection. This result would come as a surprise to, say, the Spanish or the French, who on the whole do not believe in the curative powers of competition. Quite the contrary: as was mentioned earlier, it is from France and Spain that one hears the argument that the community's external frontiers need to be reinforced in order to "compensate" producers for having to put up with 1992. However, radically improved efficiency may well be the *actual* outcome. If so, and especially if the *Uruguay Round* is successful, the community may suddenly find that the protectionist clamour has died down.

3.3 - The dynamic effects of 1992 are expected to be substantial. The Community of Twelve fulfills most of the Vinerian conditions for a successful, welfare-enhancing customs union (always assuming a reasonably successful *Uruguay Round*), which means that real incomes will rise. The commission has estimated that 5 million new jobs will be created by the end of the century, an outcome that will add something on the order of the GNP of the Netherlands to the community's output. What outsiders lose on the trade diversion swings they may gain on the dynamic roundabouts.

3.4 - European industrialists, who played a large part in launching the single market, and who much looked forward to using it as their "own" domestic base from which to take the world by storm, may realize in time that a market of 320-350 million fairly rich people is just *too small.* Only global markets and global competitiveness matter any more, and if one has to confront the competition abroad, one may as well confront it at home too.

3.5 - Ultimately, the community is too dependent on world trade to make a substantial step backward into protection. Although tactical protectionist moves may be made from time to time for political reasons, the basic understanding exists that competition and open markets are good for you — otherwise, why go for the single market at all?

4. - Conclusions

Where the balance between these various forces will finally come to rest is at present mere speculation. One can only re-emphasize the importance of bringing the *Uruguay Round* to a successful conclusion, of enhancing GATT's disciplines and extending its principles to new areas such as services and old ones such as agriculture. In the past, whenever Europe lurched forward in its long-standing ambition to create or extend a "common" market, a major GATT round followed at the initiative of the United States. This time around, the single market initiative (1985-1993) *contains* a major GATT negotiation (*Uruguay Round: 1986-1990*). This coincidence has its drawbacks (in that the community may stall over a number of issues on the ground that it is still in the process of formulating its internal market policies), but it also has its advantages: there is a ready-made forum in which third countries can air their worries and affect outcomes. However, the writer suspects that a successor to the *Uruguay Round* had better be conceived as soon as possible, in readiness for the mid-1990s, so that steady pressure on the community to remain open to both West and East can be maintained.

This is by far the best strategy for non-members and one that, if pursued relentlessly, will bring us close to a frontierless world economy before the next century is very old.

BIBLIOGRAPHY

[1] HENDERSON D.: «1992: The External Dimension», New York, Group of thirty, *Occasional Papers*, n. 25, 1989.

[2] HINDLEY B.: «Dumping and the Far East Trade of the European Community», *The World Economy*, n. 11, December 1988, pp. 445-63.

[3] TOVIAS A.: *The Impact of the On-Going Progress in the Economic Integration of Western Europe on Her Status in the World*, Paper presented to the International Annual Conference at the Hebrew University of Jerusalem, 6, 7, and 8 Jule 1988.

IV - THIRD WORLD DEBT

World Disequilibrium and Third World Debt

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The issue of Third World debt must be seen as one aspect, and by no means the most important, of the wider and more threatening problem of global disequilibrium. The world's leaders and their advisers have not so far addressed this problem with the necessary historical understanding or with a firm grasp of clear principles. Indeed, they have still to recognize and define the global interests involved, interests that have long required purposeful action. If they were to do this, it would become clear that any solution to the complex of problems involves collective responsibility, which in turn means that all major countries would accept risks and potential costs in order to protect their joint interests.

1. - General Global Disequilibrium

At the end of the Second World War there was a trinity of economic issues on which the world started to find but then lost its way — trading arrangements, parity management, and trade deficits. An élite of thinker persuaded the US and other governments to recognize that the post-war world was likely to see political and economic interdependence increase greatly. It was rightly seen that the world's wealth would be increased by a continued stimulus to the international division of labour, that innovation and adaptation would flourish in the developed areas, and that the poorer countries could develop more rapidly than in the past. It was also recognized that

liberalization of trade between nations would greatly encourage these developments.

These proposals were a bold attempt to apply the wisdom of Adam Smith's principles to twentieth century circumstances. Smith wrote: «The Government has the duty of erecting and maintaining certain public works and certain public institutions which it can never be to the interest of any individual or small number of individuals to erect and maintain because the profit could never repay the expense to any individual or small number of individuals though it may frequently do much more than repay it to a great society». Like Smith, they recognized that competitive private enterprise would be the mainspring of growing wealth creation. But like Smith they saw that this "invisible hand" would achieve its benign results only if the competitive system operated within an appropriate legal and institutional framework provided by governments — insights that Smith expounded at length but that tend to be only in part recalled or applied today. They recognized in particular that we would need, through public institutions, to supplement, support, and discipline private-enterprise operations required to finance the correcting of inter-country imbalances in a manner and over a period that avoided unnecessary dislocations.

GATT was set up to promote and sustain freer trade. But the thinking that inspired GATT and the mechanisms on which it relied was incomplete. Everybody was in favour of more free trade, but not enough thought was given to the pace at which domestic production could accept replacement by imports or to the disruptions that this process would cause. There was little attempt in government or academic circles to elucidate likely political and economic difficulties or to develop a coherent set of principles to apply to them.

The consensus in favour of freer trade was supported by recognition that this would require exchange rates that reflected fundamental economic factors. It was understood, too, that a collectively supported finance mechanism would be required to mitigate the injurious consequences of trading imbalances, for the sake not just of the country in difficulty but also of all its trading partners. The International Monetary Fund (IMF) was therefore set up to help regulate exchange rates and to soften the tendency of payment imbalances to

produce unnecessary contractions in economic activity and trade. Bretton Woods and the IMF were set up as a first step in supporting these objectives. In practice the operations of the IMF were too limited and short term. More damaging, they were focused on what were assumed to be temporary problems of deficits of advanced countries. Credit facilities were not advanced to finance advanced countries when their rhythm of imbalance was more prolonged than conventional wisdom supposed or to deal with the likely problems of the deficits of developing countries.

Bretton Woods was set up to deal with the currency problem but made little or no provision for dealing with the impact of capital flows that began increasingly to distort currency patterns and that, against the background of remarkable advances in the global economy, helped produce imbalances larger and longer than any foreseen. By the mid-1960s Bretton Woods manifestly required modernization to respond to the great advance of world interdependence and the realities of capital movements. The System needed also to deal with US inability to influence its own exchange rate or to cover its external monetary imbalances by gold payments in the manner provided for by Bretton Woods. Yet when this situation reached a crisis in the early 1970s, instead of bringing Bretton Woods up to date, the leading countries of the world precipitately abandoned it. The world's leaders opted for floating rates while still pledging that, "in full cooperation with the International Monetary Fund and those who trade with US, we will press for the necessary reforms to set up an urgently needed new international monetary system". That pledge confirmed that there was no agreed sense among governments that floating rates provided a basis for a superior or permanent monetary system. The pledge continues to be unredeemed.

There is now growing realization that the decision to float the leading currencies was a dangerous move away from the development of collective monetary discipline to a blatant unilateralism, which would pass money power into the hands of the unpredictable international restlessness of capital movements. The apostles of floating rates had failed to anticipate that exchange rates would become dominated by capital movements and would be for long periods at levels wholly unrelated to comparative economic advantage. They failed to see that

the underlying rationale of a liberal trade and investment order would be undermined. Monetary instability since then has continuously weakened the whole fabric of post-war achievement. Prolonged deformation of exchange rates has helped produce vastly greater, more anomalous, and more persistent imbalances in trading and current accounts, and dangerous inadequacies in their financing abound, greatly imperilling the banking system, deficit countries, and world trade.

The reflex responses of a dynamic world economy to all this have left the world with powerfully entrenched industrial patterns compatible only with these enormous trade imbalances. Unless this situation is corrected, the years ahead will undoubtedly witness serious financial, economic, and political dislocations. But the malign process outlined above has now reached a point where it has become impossible to achieve this correction without major advances in present economic thinking and practice. The actions of the G5 and the G7 since 1984 have, without clear analysis and comprehension of the problem, shown an uncertain and inadequate awareness of this fact. They have given the world a precarious breathing space which must be used to develop the required systemic intervention by public authorities, inspired by clearly recognized collective purposes.

Adam Smith's wisdom on the duty of government has been universally recognized in domestic financial and monetary arrangements (though not, unfortunately, always in a wise manner and extent) but has not been intelligently or sufficiently applied to our collective interest in preserving and extending the global economy. The great technological advance of the post-war years has dramatically advanced world's ability to create wealth. We now have paradox: communist countries are threatened by breakdown because of the inability of their system to permit these advances, while the free-enterprise world is endangered by its success in doing so without having created adequate financial structures to accommodate and sustain the process.

All this must be seen in the context of a world problem which has not yet been solved. In the immediate post-war world, US dominance was able to ensure at least the minimum leadership required for increasing economic interdependence and to support the promising

institutions developed to this end after 1945: Bretton Woods, GATT, the IMF, and so on. The Marshall Plan demonstrated that the world had begun to learn the lesson of German reparations after the First World War and that the "sacrifices" required by a more enlightened view produced immediate benefits to both donors and recipients. But the waning of US dominance has seen a transfer, from a power broadly able and willing to make coherent decisions in support of interdependence, to unco-ordinated plural power of a number of countries as yet neither able nor willing to do so. The result has been failure to develop, and in some aspects grave weakening of, the promising institutions set up in 1945. The transfer to plural power has not as yet been accompanied by willingness of those who wield it to accept the growth of responsibility that must accompany growing power, and the United States itself has not learned to move from dominance to leadership.

The global economy now has insufficient continuous leadership. At best, plural power is exercised with a sense of the common interest only in response to crisis (that is, after damage) and only to the extent that avoids disaster rather than yields enduring solutions. We are therefore in a state of high unpredictability and instability in inter-country financial and economic relations, all of which threatens serious political consequences.

2. - Third World Debt

As with these wider issues, discussions about Third World debt have lacked historical perspective or a search for clear principles.

Throughout the post-war period, governments recognized that the advanced countries had important collective interests, political and economic, in assisting the development of countries in Latin America and elsewere by the transfer of funds; that is, resources. They saw, too, that in many cases this could be undertaken only to a limited extent on a purely commercial basis without government commitment.

Even before 1974 the aid and loans, provided by governments and their agencies, were far less effectively deployed than they might

have been. Among other shortcomings, there was no attempt to influence recipient governments away from propensities to create misguided areas of state enteprise or state regulation calculated to prejudice severely wealth creation by their private enterprise sectors. But the methods adopted did not at any rate result in financial crisis either for the borrowing countries or for the lending or donating governments.

The oil cartel's actions in 1974 brought about a new situation in which the transfer of funds required was clearly greater than could be contemplated within existing budgetary conventions. Private banks, however, loaded with oil money and encouraged by their governments and regulators, undertook to recycle massive funds by way of lending to Latin American and other countries. This unregulated recycling process helped bring about expansion of the so-called Euro-currency market. This market was itself a world-wide area of banking, virtually free from the regulation that every modern government had for long applied to domestic banking systems, and added to the anarchic monetary conditions that came into being as Bretton Woods broke down.

The delusion, shared by everybody concerned, was that just as advanced countries were able to borrow unlimited amounts in their domestic currencies, these countries borrowing in foreign currencies would be able to refinance their obligations for an indefinite period ahead. But foreign-currency loans require an export surplus if they are to be serviced in real terms. There was no attempt by private banks, central banks, or the governments of creditor or debtor countries to assess whether or when the borrowings could be serviced in real terms without prejudicing the debtor economies (or indeed the creditor economies that would have to receive the necessary export surpluses involved if they materialized). The whole operation was based on the delusion that continuous refinancing would be available indefinitely to cover new borrowings and service at compound interest the old ones.

Predictably this process lost credibility and resulted in a halt to new lending in 1981 and, indeed, to a reserve transfer of funds in order to meet the resulting crisis. It is perhaps worth pondering why governments and central banks saw their role only as cheerleaders of

this process and why, in a world never richer in economic institutes, full-time professional advisers, and commentators, so few voices were heard expressing concern between 1974 and 1981. Since then there has been no acceptance by the governments of the advanced countries or their central banks of the basic principles that will have to govern the parties if we are to achieve a satisfactory outcome from these difficulties. My own view of these six basic principles can be stated thus:

1) the advanced countries, governments, and peoples (yes, including their taxpayers) have important interests in the economic and political progress of the debtor countries, to say nothing of their responsibilities for ensuring the safety of the world's banking system. They have a limited ability to influence events favourably. The main responsibility for their economic and political achievements will always depend upon the actions of the debtor countries themselves. But our political and economic objectives require that, as far as we can, we support development of democratic and stronger economies and healthy private enterprise within these countries. For this purpose they undoubtedly need funds, at least to cover the interest on outstanding debt;

2) a net flow of resources to the Latin American and other debtor countries for a considerable period ahead will advance our interests and theirs: a premature net flow of resources from them in the years immediately ahead will be prejudicial to their interests and ours;

3) the ability of most Third World debtor countries (notably, the Latin American debtors) to service debts at compound interest and in real terms to the extent and within the time scale required by an unsupported commercial operation is wholly unpredictable. The mountain of unserviceable debt already piled up and rising ought to have made any renewal of such a concept wholly unthinkable;

4) therefore, if it is judged that substantial new credits to these countries are appropriate and relevant to our interests and theirs, it is dangerously speculative to expect that their interests can be served by a purely commercial operation in the years immediately ahead. Our objective must be to provide new lending on a reliable basis sufficient

to end at the earliest possible date the premature export surpluses of the debtors, which are against the interests of debtors and creditors and of world trade. Until 1982 the governments of the advanced countries unanimously recognized that a positive transfer of resources to Latin America and other Third World countries would promote our interests and theirs. But since 1982 they have been forced, by the failure of the erroneous methods of recycling, to bring about a premature and damaging reverse transfer from these countries. Thus, what started out as a consensus of the advanced countries governments to assist these countries has degenerated into the very opposite. This was not intended and is neither sustainable nor desirable;

5) most governments still recognize the need for new money to be provided. What they have not recognized is that lending on the scale required cannot be achieved in the years immediately ahead without government backing. The view held by governments and the IMF — that private banks could be expected to resume voluntary lending in the near future — is the central reason why there has been no real progress in resolving this problem. It is neither feasible nor desirable to expect private banks to resume lending on a voluntary basis for many years ahead. Moreover, private banks can not by themselves either influence the outline economic policies of the debtor countries or control the total amounts of borrowing or its direction. The misguided and futile attempts by the leading countries after 1981 to persuade the banks to undertake unsupported new lending would, if successful, have prepared an even greater crisis later on;

6) private bank lending will be required, but it must be controlled in its extent and terms: it must be supported as well as disciplined by the institutions of the advanced countries. The debtors for their part must submit economic policies designed to strengthen their economies in the long terms, not, as at present, to create an export surplus long before this can be achieved without prejudicing their economies and politics. Continuous IMF approval would be the basis for arranging the necessary guarantees by international institutions which would ensure a flow of genuine new loans from the market sufficient to meet that part of the interest at present being met by export surpluses. The lending would by no means be purely for use of governments, though the foreign currency received would, of

course, be available to them to meet their external commitments. Steps must be taken to ensure that private industry participated strongly in any new funding.

The IMF's mandate should be not, at present, the short-term one of exacting a premature export surplus from the debtors, but the longer-term one seeking, with agreement of debtor governments, reforms likely to promote sustainable economic growth, within which, over a lengthy period, export surpluses could be developed. For the poorest countries, a more realistic system of aid will be required, but on a basis conceived more intelligently than in the past. The IMF's arrival will always imply some unattractive realism for debtors, but its present mandate makes it the precursor of riots. What I am proposing will not merely invite debtors to accept disciplines that are in their own long-term interest but also offer the immediate advantages of new funding. The *Baker* and *Brady Plans* signify movement in the direction of recognizing the realities I have outlined, though in an imperfect and inadequate manner. Their ideas must be encouraged and developed.

3. - Conclusions

Past lending was undertaken under a delusion shared by governments, regulators, and private banks. Important global interests were in fact served during this period, but in a profligate and unsustainable manner. The result is a greatly exposed banking system and Latin American and other governments saddled with an unmanageable level of debt. Emergency actions included enforcing a premature export surplus from debtors, but one insufficient to cover interest on the old debts. Hence the debt continues to increase and the economies and politics of the debtor countries, as well as world trade, are all injured. The leading banks have to deal with increasingly incredible debt claims on their books. They will require years to make provisions to bring their books into accord with market realities.

Our objectives in respect of past and future debt must be threefold: 1) to end as early as possible all anomalous, premature

transfers of resources from debtors; 2) ultimately to achieve a positive flow of new resources to many debtor countries for a period ahead until each country can achieve an export surplus without prejudicing its economic growth or world trade balance; and 3) to achieve these objectives while protecting the fundamental interests of the private banking system.

An outline of one of the possible ways in which we could achieve these objectives is as follows. Subject to IMF approval of debtor-country policies case by case, appropriate government agencies must provide guarantees that ensure new funding to the debtors to the extent necessary to remove the negative transfers from them without further prejudicing the banks. In return, the banks must accept the obligation to continue to make provisions against the existing stock of debt over the coming years by a percentage of their future profits. It should be understood that the flow of foreign currency to the debtors provided by governments, the IMF, and the World Bank is even now an indirect but important contributor to the receipt by banks of interest. Money is fungible. The additional action I am proposing would reliably ensure a flow of funds to meet interest in full. It would be fair and in the banks' own long-term interest, in return for this consideration to agree to transfer the debts to an appropriate international agency, at the then-written-down book value when required at some time in the future.

The flow of new funds would ensure debtors' ability to maintain interest payments without depriving them of a sizeable part of their export earnings. The banks would be able to make provisions against the debt every year at an increasing rate as the debt diminished. At the appropriate time in the future — say, in 10 to 15 years — an intergovernmental agency would take over existing debts at their then value after provisions and would reduce the debtors' obligations accordingly, taking into account each debtor country's position at that time.

Debtors would be adding to their foreign currency debts by new borrowing to replace their export surplus, but within arrangements that ensured that the total debt would be ultimately reduced by the provisions being made by the private banks in respect of existing debt. On the one hand, debtors would increase their indebtedness by new

borrowing, which would make it possible for them to use their export expansion to finance internal economic development. On the other hand, they would be assured of an ultimate massive reduction of existing debt, to a fraction of its present size. With these arrangements the debtors' immediate gains would support motivations for economic reform and gain time within which these could fructify. The banks for their part would be receiving their full interest, thus enabling them to increase provisions in relation to their debt each year out of future profits. We would thereby be creating a sound and realistic basis for the resumption of new voluntary lending, as each debtor country, at varying pace and with improved economic and financial policies, brought about the required economic growth.

The present arrangements result in a steadily mounting dollar debt of increasing incredibility, chronic tension between debtors and creditors, serious internal political and economic damage within debtor countries, and injury to world trade. Action governed by the principles outlined above would reconcile the long-term interests of the creditor and debtor countries and of our banking system. It would share the burden in a fair and practicable manner between them. If my proposal, or action to the like effect, were taken by governments we would be gaining time to repair past errors and would reconcile the long-term interests of both creditor and debtor countries.

I am satisfied that governments and bank regulators could ensure that no bank could seek to be a free rider to these arrangements. But I will not here go into the detailed mechanism required for this or of the guarantee action I am proposing. What follows is merely an outline of what would be needed:

1) the IMF would examine the economic policies of each country case by case, on the understanding that satisfactory policies would allow them to recommend export credit or other governmental agencies to provide guarantees for new borrowing within a specific total for each period and each country. The totals would in any year be such as to limit the use of the debtors' export surpluses to a level compatible with their economic growth;

2) any country that had won the IMF's seal of approval would know that the agencies of the advanced countries would be prepared

to guarantee bank lending within prescribed amounts. Given the guarantees, there would be no difficulty in achieving the required funds from the markets;

3) a small intergovernmental agency would be set up to co-ordinate the actions of the government agencies of different countries, mainly to ensure that lending was within prescribed limits and enjoyed the continuous supportive recommendation of the IMF, based on its revised mandate;

4) governments and central banks would have to act in cooperation with the other agencies to ensure that existing bank creditors accepted the conditions to write down existing debt and undertake to transfer it to an appropriate international agency, on demand at a future time, at the then-written-down value.

Governments have still not recognized that, in this area and in this period, one cannot support these important global economic and political interests without taking some collective responsibility for the risks and losses involved and influencing debtor countries' economic policies, so far as is realistically possible. Conventional wisdom has great difficulty in accepting that in this area commercial agencies must be used to achieve social purpose, but on a basis that requires the intervention of public authorities to both discipline and support the operation. This principle has been taken for granted in many other areas, such as export credits and the financing of small businesses domestically. What I have proposed is no departure from sound principle but a necessary extension of it to our international concerns.

V - THE REFORM OF THE INTERNATIONAL MONETARY SYSTEM

International Nominal Targeting (INT): A Proposal for Overcoming Obstacles to Policy Coordination (*)

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The central theorem about the economic gains from international policy coordination which has very strong implications for the design of the international monetary system is that if countries in general set their policies jointly they will be better able to attain their economic objectives than if they set them independently. (The alternative non-cooperative equilibrium, in which each country independently sets own policies, taking the politicies of the others as given, is its termed the Nash equilibrium). The coordination theorem appears to be a strong argument for policy makers to set up the machinery for regular meetings and cooperative setting of macroeconomic policies, and the entire issue has been a popular research topic in the academic community since at least the early 1960s.

Since September 1985, when the finance ministers of the Group of five (G5) countries struck their *Plaza Agreement*, international coordination has become popular in the policy making community as well. Although that agreement concerned only the exchange value of the dollar, it formalized the process of cooperation, which was broadened to include the rest of macroeconomic policy management

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(*) I thank Julia Lowell for highly efficient research assistance and Ralph Bryant, Doug Purvis, and John Williamson for comments and suggestions. Summary versions of the paper are available as FRANKEL [15] and [17].

Advise: the numbers in square brackets refer to the Bibliography in appendix.

at the Tokyo Summit meeting of The Group of seven (G7) leaders in May 1986.

Just as international coordination has caught on among policy makers, however, some academic economists have turned skeptical (at the public level, beginning with Feldstein [10] [11]). They have come up with a variety of obstacles to coordination, points that invalidate the universality of the theorem that coordination must always leave countries better off. These obstacles fall into three categories: the enforcement of compliance with any given agreement, the inflation-fighting credibility of monetary policy, and uncertainty.

Consequently, this paper begins with a review of the obstacles to successful coordination. It then takes the more constructive route of offering a modest proposal for the form that successful coordination might take. The proposal is for an international version of targeting nominal GNP (or aggregate demand) that I call international nominal targeting (NIT) (1). It is designed to have a better chance of overcoming the three kinds of obstacles to coordination than the current system established by the G7 leaders at Tokyo. A key element of the proposal is that it could begin with nations' sacrificing only a very small amount of national macro-economic sovereignty — that is, with very wide bands around the target. Trust and confidence in the institution could build slowly, and then nations could progress to higher degrees of coordination if they so desired.

The essence of the argument for the need for coordination is the existence of international externalities or spillover effects. If they did not exist — that is, if each country were unaffected by changes in other countries — the decentralized, non-cooperative solution for obtaining economic objectives would be optimal, and there would be little role for international meetings or a supranational institution to coordinate policies (just as there would be little role for government intervention in the domestic economy if domestic markets functioned competitively and without externalities). If, for example, floating exchange rates insulated each country from others' disturbances, there would be no need for coordination. Since this sort of insulation

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(1) The INT proposal appears in brief form in FRANKEL [15] and in a longer version in FRANKEL [16].

does not exist, spillover occurs, and so, says the theory, coordinations preferable to non-cooperation (2).

One cannot know, however, whether or what kind of coordination is desirable without first knowing the nature of the externalities. Is the Nash non-cooperative equilibrium too contractionary because of a proclivity toward beggar-thy-neighbor policies? Then joint expansion is called for. (This was the logic of the "locomotive theory" that gave rise to the 1978 Bonn Summit meeting (3). Or is the existing equilibrium overly inflationary? In that case, joint discipline is called for. (This is the apparent motivation underlying the founding of the European Monetary System — EMS). Perhaps the problem is "competitive appreciation". Each country seeks by its policy mix to raise real interest rates, attract capital inflows, and appreciate its currency, thereby reducing the consumer price index for any given level of output and employment. Or perhaps it is "competitive depreciation" (as was feared at Bretton Woods in 1944 on the basis of the experience of the 1930s). If either of the last two such externalities is important, it points to a need for coordination schemes that give more emphasis to exchange rate stability than does the proposal developed in this paper, for schemes like those of McKinnon [35] and [36], Williamson [46], and Williamson and Miller [47], [38]. Yet if the problem is thought to be monetary policy that is overly contractionary or expansionary, then a switch toward a regime of greater exchange rate stability would likely exacerbate the problem by increasing the international transmission of disturbances.

One premise of the INT proposal is that the relevant externalities concern the overall degree of expansion of macroeconomic policies — that is, monetary and fiscal policies are too tight or too loose. The plan

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(2) The standard formulation of the Theorem contains a second technical qualification for the optimality of coordination. Each country must have more economic objectives (such as trade balance equilibrium, output equal to the full employment level, and zero inflation) than it has independent policy instruments (such as monetary and fiscal policy). If each has as many instruments as targets, then each can offset the actions of the others so as to attain its optimum and issues of conflict and cooperation among countries do not arise. In practice, countries seldom feel that they have enough freedom to be able to attain their optimum positions.

(3) The history of the Bonn Summit and the other annual meetings of the leaders of the G7 countries is given in PUTNAM and BAYNE [41].

does not address the proper *mix* of monetary and fiscal policy or the resulting real interest rate (4).

Some people object that a plan for using monetary policy to target nominal GNP would have done little to prevent the major disequilibrium that arose in the early 1980s, the US budget and trade deficits. But I agree with Feldstein [10] that this disequilibrium was not a failure of coordination, — that the US government did not pursue the policies it did as result of insufficient expansion by its trading partners. (Indeed, until after 1985, the administration did not even want Europe and Japan to expand). No international bargain would have brought about a US fiscal correction. Only a recognition by the administration and the Congress of the link between their fiscal policies and the trade deficit (together with the political will necessary to make difficult budget choices) would have done so. By the same token, neither INT nor any other proposals for coordination should now be allowed to distract attention from the point that the most important policy changes to be made in the coming decade can be made unilaterally by the United States (5).

1. Obstacles to International Policy Coordination

As already mentioned, the obstacles to implementing a successful regime of macroeconomic policy coordination are of three sorts: enforcement, the need for time-consistent inflation-fighting credibility, and uncertainty. In this section, I deal in turn with each and related topics.

1.1 *Problems of Enforcement and the G7 Indicators*

Difficulties of enforcement and credibility have received the most attention from economists. Even when a coordination package guar-

(4) Such questions are described by the next section of this paper in its review of the obstacles to coordination (except in the discussion of inflation-fighting credibility, which applies only to questions of overall economic expansion).

(5) Such thoughts are supported by the findings in FRANKEL and ROCKETT [19] and FRANKEL [14] and [15] that the gains from coordination would usually be smaller than the gains from the United States' discovering the true model and unilaterally adjusting its policies accordingly.

antees that each member country will be better off than it would be in the non-cooperative equilibrium, a country will be able to do better still if it unilaterally deviates from the agreement. If the agreement calls for joint expansion, for example, an individual country may be tempted to hold back somewhat and let its partners bear the burden of expansion (that burden being a trade deficit or a depreciation of the currency).

It is worth recalling, however, that saying a country will be able to do better by deviating from the agreement refers to the short run and holds under the assumption that the other countries keep their policies as agreed. In future periods, those other countries will presumably retaliate by also abandoning the agreement. Thus, economists have probably overemphasized the difficulties of enforcement (6).

Norms for behaviour — "peer pressure" in the language of US Treasury official David Mulford after the Tokyo Summit (quoted in Funabashi [23], p. 131), or the formation of "reputations" in the language of economic theory — may be sufficient to enforce compliance with an agreement, provided it meets two conditions: 1) the agreement must specify explicitly what is required of each party in terms of observable economic variables. Since each party has an incentive to cheat, it is hard enough to enforce a clear-cut agreement; enforcement is hopeless if the parties have not even spelled out what is required of them; 2) the constraints embodied in the agreement must be specified in such a way that unilateral cheating in any given period would give a country a short-term gain that is small relative to the potential future loss (when the cooperative agreement breaks down) of the grains over the Nash non-cooperative equilibrium.

If these two conditions are met, it is unlikely that one country will cheat just because it can gain a bit more over the cooperative equilibrium.

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(6) KENEN ([29], pp. 31-6) thinks so. HOLTHAM and HUGHES HALLETT ([28], p. 130) agree: economists have perhaps focused on moral hazard problems because of their interesting logical character rather than because of their empirical importance. It seems likely that uncertainty and model disagreement are greater obstacles to international cooperation.

At the Tokyo *Summit* of May 1986, it was decided that the finance ministers of the G5 countries (thenceforth, the G7 countries) would focus in their meetings on a set of ten "objective indicators": the growth rate of GNP, the interest rate, the inflation rate, unemployment, the ratio of the fiscal deficit to GNP, the current - account and trade balances, the money growth rate, international reserve holdings, and exchange rates (7).

The list was further discussed and somewhat trimmed down at subsequent G7 meetings. By the time of the Venice Summit in June 1987, it had apparently been reduced to six indicators: growth, inflation, trade balances, government budgets, monetary conditions, and exchange rates (8). Nevertheless, US Secretary of the Treasury told the annual meeting of the International Monetary Fund (IMF) in October 1987 that: «the United States is prepared to consider utilizing, as an additional indicator in the coordination process, the relationship among our currencies and a basket of commodities, including gold». And at the Toronto Summit of June 1988: «the G7 countries welcomed the addition of a commodity price indicator and the progress made toward refining the analytical use of indicators» (*IMF Survey*, September 26, 1988, p. 292).

At no time have the 67 members made any pretense that they will rigidly commit themselves to specific numbers for the indicators — not in the sense that sanctions will be imposed on a country if it deviates far from the values agreed upon. But the plan does include the understanding that "appropriate remedial measures" will be taken whenever there develops significant deviations from the "intended course". This language seems to suggest that the indicators are not intended to be mere national forecasts and that the system is intended to include some substantive bargaining over policies, rather than be simply an exchange of information. Thus the current G7 system can be viewed as an attempt at small-scale coordination sacrificing just a

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(7) The story of the Tokyo Summit is recounted in both PUTNAM and BAYNE [41] and FUNABASHI [23].

(8) This list did not appear in the official communique but rather in comments to the press by US Assistant Secretary of the Treasury David Mulford. FUNABASHI ([23], esp. 130 ff.) offers a fascinating account of the machinations of the G7 mechanism from 1985 to 1987.

little national macroeconomic sovereignty, a necessary stage for building confidence before moving on to more binding forms of coordination.

The G7 list of indicators, be it six or ten, is not, however, especially well suited to workable coordination described above. It is difficult to imagine a G7 meeting applying moral censure to one of its members for, say, having experienced a higher rate of real growth or a lower rate of inflation during the year than had been agreed on in the previous meeting.

The main problem with the list is that it is too long to be practical. When each country has six or ten indicators but only two or three policy instruments, it is virtually certain that the indicators will give conflicting signals. Thus, the national authorities will feel little constraint on their setting of policy instruments. Frenkel, Goldstein, and Masson ([21], p. 22) note that one argument for choosing a single indicator is that when multiple indicators send conflicting signals, authorities can hide behind the confusion. They also observe that multiple indicators can encourage "overcoordination"; setting a single indicator allows each country to retain some degree of freedom in setting its monetary and fiscal policies. In this light, a serious coordination scheme might *begin* in the 1990s by setting only one indicator and progress to commitments to multiple variables only when and if sufficient political consensus and confidence has developed to justify more sacrifice of sovereignty.

Another problem with the G7 indicators is that they are kept secret. It is difficult to reconcile optimistic statements about the amount of substantive coordination already taking place with the fact that G7 meetings do not publicly announce the agreed targets for the indicators. How can any pressure (be it moral persuasion, embarrassment, effect on long-term reputation, or outright sanctions) be brought to bear on countries that stray from targets that have not been made public?

To take a recent example, in the *Baker-Miyazawa Agreement* reached in San Francisco in September 1986, the Japanese apparently agreed to a fiscal expansion in exchange for a promise from the US Treasury secretary that he would stop "talking down" the dollar, plus the usual US promise to cut the budget deficit. In the months that

followed, each side viewed the other as not fully living up to the agreement. (The episode is described in Funabashi [23]). But it was difficult for anyone to verify the extent of compliance because the precise terms of the original agreement had not been public.

Indeed, the G7 guards the values of the indicators with even more secrecy than the central banks guard their foreign exchange market interventions. Theory says that the success of a target zone is *enhanced* when speculators are made aware of the boundaries (9). Why then does the G7 keep them secret? A possible answer is that the members do not want to lose face if their economic variables subsequently break outside the target band. (This answer fits in well with the suspicion that the G7 meetings may, in fact, reach no substantive agreements but nevertheless find it politically useful to issue communiques, the public announcement being sufficiently vague that each member can interpret them to its own advantage (10).

Thus, the need to monitor performance criteria in order to enforce compliance with any coordination agreement suggests two conclusions about the current 67 system: 1) it would be better for the agreement to focus on one variable than on six or ten or eleven; and 2) the targets for the variable should be made public.

Below, I will develop further desirable characteristics for that variable.

1.2 *Problems of Inflation-Fighting Credibility*

A number of the problems that arise in international policymaking occur in the context of domestic policymaking as well. One of them is the need to set monetary policy so as to keep the public's expectations of inflation low. One way that monetary policymakers can do this is to precommit themselves to rules of

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(9) See KRUGMAN [30] for the application of the latest "smooth pasting" technology to this problem.

(10) It is clear from FUNABASHI [23] that the various members held differing views as to which indicators were most important, what responses were called for if indicators strayed from the agreed-on path, and how binding the agreement should be. It is also clear that each was able to interpret the *Plaza* and *Louvre Agreements* afterwards so as to reflect its own views.

monetary discipline. To be useful, that commitment must be credible or, in modern theoretical parlance, "dynamically consistent" (11).

Macroeconomic policymaking is always a trade-off between the advantages of rules and of discretion. In the past, writers concerned with either of the two problems often simplistically assumed away the other. If the aim is to maximize economic welfare (a function of output and inflation) for a given period only, ignoring long-run implications for expected inflation, discretion can be shown to be unambiguously superior to rules; after all, how can one possibly gain by agreeing to limit beforehand the ability to respond to developments in the economy? If, on the other hand, one ignores the possibility of short-run disturbances, rules can be shown to be unambiguously superior to discretion in a long-run equilibrium; macroeconomic policy cannot affect output in the long run anyway and precommitment to a nominal anchor can reduce expected inflation and thereby reduce actual inflation.

It should be clear by now that neither extreme in the debate represents the complete correct answer. If the political system's policymaking process is allowed to optimize on a purely short-run basis, the outcome will be overexpansion. Thus, some degree of longer-term commitment to resisting inflationary temptations is indicted, even if it is a decision to insulate the central bank from the political process rather than to adhere formally to a nominal anchor or rule (12). Yet in a world where new disturbances do come along, it

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(11) A "dynamically consistent" or "time-consistent" regime is one that manages to prevent the monetary authorities from breaking the commitment to monetary discipline where they otherwise might have an incentive to do so in the future. For recent surveys of the rules-versus-discretion debate and the implications of the time-consistenty literature, see BARRO [1], FISCHER [12], and ROGOFF [44].

(12) That Milton Friedman has had more influence on this issue than one human being is usually able to have is justifiable. Nevertheless, two aspects of his campaign against the Federal Reserve Board have long been puzzling. First, his argument against discretion in monetary policy-making is largely based on the analysis in Friedman and Schwartz that the Federal Reserve made the Depression of the 1930s much worse than it otherwise would have been by "allowing" the *M*1 money supply to fall. Yet in recent decades he has campaigned for the Federal Reserve to do precisely what he accuses it of doing in the 1930s: set a firm target for the monetary base, rather than for *M*1. The second, even more puzzling aspect is that Friedman and his fellow monetarists claim to believe that US money growth would be slower and more stable if monetary policy were placed more under the control of the democratic political process, via the Treasury or

is important that the government retain at least some ability to respond to stabilize the economy. The solution is commitment of *some* degree but less than 100% to some nominal anchor (13).

1.3 *Coordination and Inflation in the Long Term*

An important critique of international coordination is the point made by Kenneth Rogoff [42]: if governments set up the machinery for joint welfare maximization period by period, as they did at the Bonn Summit of 1978, the cooperative equilibrium in each period is likely to entail more expansion than would otherwise be present. Countries may find this joint expansion advantageous within any given period, but in the long run it will undermine governments' inflation-fighting credibility and result in a higher inflation rate for a given level of output. In the Rogoff view, renouncing the machinery of coordination is one of the ways that governments can credibly precommit themselves to less inflationary paths.

It is important to realize that the introduction of longer-term issues of credibility, time-inconsistency, and precommitment can just as easily run in favor of coordination as against it. If the perceived externality or shortcoming of the Nash noncooperative equilibrium is that it is overly expansionary, then the coordination equilibrium, even if arrived at period by period, will entail less expansion, not more. This is sometimes argued to be the basis underlying the European Monetary System. The rhetoric that Helmut Schmidt and Valéry Giscard d'Estaing used in originally proposing the EMS in the late 1970s suggested that they were doing so because the United States was neglecting its duty of supplying to the world the public good of a stable, non-inflating currency. Ten years later, many observers of the EMS (for example, Giavazzi and Pagano [25]) have decided that its

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the US Congress, than under the control of elitist central bankers such as Paul Volcker. It is particularly ironic that when a member of the monetarists' Shadow Open Market Committee finally became undersecretary of the Treasury for monetary affairs in the early 1980s, his view that the money growth rate was dangerously high was overruled by the Treasury and the White House, who sought to pressure the Federal Reserve for faster money growth in the period leading up to the 1984 election.

(13) ROGOFF [43] shows that some intermediate degree of commitment to a target is optimal for monetary policy.

success lies precisely in giving inflation-prone countries such as Italy and France a credible nominal anchor for their monetary policies. Commitment to exchange rate parity or a band vis-à-vis a hard-currency country such as Germany constitutes precisely the sort of time-consistent, low-inflation policy sought by those who worry that central bankers left to their own discretion will be overly expansionary.

The case of the EMS does, however, offer an asymmetry. It is an accepted fact that Germany — because of its history or some other reason — places very heavy weight on price stability. Thus, the weaker-currency countries can import inflation-fighting credibility by pegging themselves to the greater mark area (14). In contrast, there can be no presumption that the United States (the natural "Stackleberg" leader) has as much inflation-fighting credibility as do Germany and Japan. Thus proponents of worldwide coordination cannot automaticly presume that year-by-year coordination would lower the average world inflation rate, rather than raise it.

1.4 *The Choice of a Nominal Anchor*

The implication of the credibility issue is that a scheme for coordination is more likely to produce long-run gains if it has national governments committed not just to each other period by period but also, in some degree, to a nominal anchor for a longer term. The G7 list of indicators includes four nominal variables: money, the price level, the price of gold, and the exchange rate. I will develop grounds for choosing the nominal variable on which coordination should focus and argue that the optimal one is nominal GNP, a variable that does not even appear on the G7 list.

The appendix to this paper considers the problem formally. It makes no judgment on the desirable degree of precommitment to a nominal target, in the context of either domestic or international

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(14) There is a close analogy here with the idea in ROGOFF [43] that if a particular individual — say, Paul Volcker — is known to have extreme aversion to inflation, then the country can gain by appointing him as central banker, even if the country's objective function puts less weight on fighting inflation; his tight-money credibility will reduce the public's expectations of inflation and in long-run equilibrium will produce a lower level of actual inflation for any level of output.

policymaking, so long as it is greater than zero and less than infinity (15). The important point is that nominal GNP (or nominal demand) makes a more suitable target than the four nominal variables in the G7 list.

The general argument has been made well by others (16). In the event of disturbances in the banking system, in the public's demand for money, or in other mechanisms that affect the demand for goods, a policy of holding nominal GNP steady insulates the economy; neither real income nor the price level need be affected. In the event of disturbances to supply, such as the oil price increases of the 1970s, the change can be divided equally between an increase in the price level and a fall in output. (For some countries, equal shares is roughly the split that a discretionary policy would choose anyway (17). In general, fixing nominal GNP will not give *precisely* the right answer unless the objective function puts precisely equal weights on inflation and real growth. But where if the choice is among the available nominal anchors, nominal GNP will give an outcome characterized by the greatest stability of output and the price level. As demonstrated at the beginning of the appendix, a nominal GNP target strictly dominates a money supply target, in the sense of minimizing a quadratic loss function, regardless of how important inflation-fighting credibility is. The appendix goes on to show that a nominal GNP target also dominates an exchange rate or price-of-gold target (unless extraordinarily high weight is placed on the objective of stabilizing the exchange rate or price of gold).

To take an example from recent history, in late 1987, the US Federal Reserve, citing large velocity shifts, decided to allow *M*1 to

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(15) Analogously, I take as given by the political process the degree of commitment to coordination.

(16) GORDON [26], HALL [27], TAYLOR [45] and MCCALLUM [32], [33] and [34], for example, argue in favour of targeting nominal GNP in the closed-economy context. The idea also has proponents in the United Kindgom: BEAN (1983), MEADE [37] and BRITTAN [5]. MILLER and WILLIAMSON ([47, pp. 7-10) propose targeting nominal demand as part of their blueprint for exchange-rate target zones.

(17) Switzerland cn be given as an example of a country that chose to take the adverse supply shock of 1974 almost entirely in the form of lost income and employment in order to restore price stability. Sweden was a country that chose to take it almost entirely in the form of inflation, in order to preserve output and employment. The United States fell in between.

break well outside of the previously announced target zone. From the second quarter of 1987 to the second quarter of 1986, *M*1 grew 10.3% per year, leading some observers to suggested that the Federal Reserve was following a general policy of targeting nominal GNP. The monetarists were furious. For four years, they decried the betrayal of the money growth rule and warned that a major return of inflation was imminent. In retrospect howevers, nobody can doubt that the Federal Reserve had chosen the right course. Even with the recovery that began in 1983 and continued through the four years and beyond, nominal GNP grew at 8.0% per year — more slowly than the money supply. Thus, velocity declined at 2.3% per year, in contrast to its past historical pattern of increasing at roughly 3% a year. If the monetary authorities had followed the monetarist prescription of rigidly pre-committing themselves to a money growth rate lower than that of the preceding period — say, 3% — and velocity had followed the same path, then nominal GNP would have grown much less — at only 0.7% a year in the example. In fact, this number is an upper bound. With lower inflation than occurred, velocity would almost certainly have fallen even more than it did, and the recession of 1981-1982 would have lasted another five years!

1.5 *Problems of Uncertainty*

The argument that nominal GNP dominantes such variables as the money supply as a candidate for a nominal anchor applies to international economy policy even more strongly than to domestic policy. The reason is that uncertainty, though it is certainly a problem for policy makers in a closed economy, is an even greater problem in an open economy.

Before a country can enter negotiations with other countries on coordinated policy changes, it needs to know three things: 1) what is the initial position of the domestic economy relative to the optimum values of the target variables?; 2) what are the correct weights to put on the various possible target variables?; 3) what effect will each unit change in the domestic and the foreign macroeconomic policy variables have on the target variables; that is, what is the correct model of the world economy?

These three elements follow simply from the algebraic expression for the economic objective function (18):

$$(1) \qquad W = (1/2)(y^2 + w_x x^2 + w_p p^2)$$

$$(1a) \qquad W^* = (1/2)(Y^{*2} + w^*_{x^*} x^{*2} + w^*_{p^*} p^{*2})$$

where W is the quadratic loss to be minimized, Y is output (expressed in log form and relative to its optimum), x is the current account (expressed as a percentage of GNP and again relative to its optimum), p is the inflation rate, w_x is the relative weight placed on the current account objective, w_p is the relative weight placed on the inflation objective, and an asterisk, (*), denotes the analogous variables for the foreign country.

There are two policy instruments: the money supply, m (in log form), and government expenditure, g (as a percentage of GNP). For the home country, the marginal welfare effects of changes in these policy variables are then given by

$$(2) \qquad dW/dm = (Y)Y_m + w_x(x)x_m + w_p(p)p_m$$

$$(3) \qquad dW/dg = (Y)Y_g + w_x(x)x_g + w_p(p)p_g$$

$$(4) \qquad dW/dm^* = (Y)Y_{m^*} + w_x(x)x_{m^*} + w_p(p)p_{m^*}$$

$$(5) \qquad dW/dg^* = (Y)Y_{g^*} + w_x(x)x_{g^*} + w_p(p)p_{g^*}$$

and it the foreign country:

$$(2a) \qquad dW^*/dm = (Y^*)Y^*_m + w^*_{x^*}(x^*)x^*_m + w^*_{p^*}(p^*)p^*_m$$

$$(3a) \qquad dW^*/dg = (Y^*)Y^*_g + w^*_{x^*}(x^*)x^*_g + w^*_{p^*}(p^*)p^*_g$$

$$(4a) \qquad dW^*/dm^* = (Y^*)Y^*_{m^*} + w^*_{x^*}(x^*)x^*_{m^*} + w^*_{p^*}(p^*)p^*_{m^*}$$

$$(5a) \qquad dW^*/dg^* = (Y^*)Y^*_{g^*} + w^*_{x^*}(x^*)x^*_{g^*} + w^*_{p^*}(p^*)p^*_{g^*}$$

where the policy multiplier effect of money on output is given by Y_m, the effect of money on the current account by x_m, and so on. To solve

(18) The specification here is a function of three target variables. One could as easily have more or fewer.

for the optimum, one can set these derivatives equal to zero, with the target variables, y, x, and so on first expressed as linear functions of the policy variables m, and g. For the Nash non-cooperative equilibrium (in which each country takes the other's policies as given), only equations *(2)*, *(3)*, *(4a)*, and *(5a)* are needed for the solution. Each country ignores the effect that its policies have on the other country, so equations *(4)*, *(5)*, *(2a)*, and *(3a)* do not enter the mode. Indeed, this is precisely the reason the non-cooperative equilibrium is suboptimal. These cross-country effects enter only in the determination of the cooperative solution).

Before deciding on a policy change, policymakers must at least know the sign of the corresponding derivative. Equation *(2)*, like all the eight derivatives above, neatly illustrates the three kinds of uncertainty. The first is uncertainty about the initial position of y, x, and p (19). Position uncertainty, in turn, breaks down into three parts: 1) uncertainty about the current value of the target variable in question (20); 2) uncertainty over the baseline forecast — how the target variables are likely to move during the forthcoming period (usually a year or more) in the absence of policy changes (21); and 3) uncertainty about the optimum value of the target variable (22).

The point is clear. Policymakers' estimates of the current values

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(19) Uncertainty about the position of the economy in the absence of policy changes is the same thing as uncertainty about the disturbance terms in the model of the economy, such as the disturbances in the appendix to this paper. That appendix, though it considers uncertainty in an open economy, deals only with a country's unilateral policy-making problem. In this section, I am considering the problems that uncertainty creates for coordination per se.

(20) This uncertainty is a genuine concern. MANKIW and SHAPIRO (1986) find that the standard deviation from the preliminary estimate of the real growth rate to the revised final number is 2.2 percentage points.

(21) KENEN and SCHWARTZ (1986) have studied the accuracy of current-year forecasts in the IMF, *World Economic Outlook* for the last 15 years. They find that the root mean squared error among the G7 countries is 0.773 percentage points for real growth and 0.743 percentage points for inflation. These prediction errors, although relatively small, are large enough to reverse the signs of the derivatives of the welfare function equations *(2)* to *(5)*. Errors would presumably be much larger for the horizons of two years or more that are probably most relevant for policymaking. Many major international econometric models show that the effects of monetary and fiscal policy peak in the second year for output and not until more than six years for the price level or current account. See BRYANT *et* AL. [7]

(22) Economists disagree about the correct estimates of, for example, the natural rate of unemployment and the level of potential output.

of y, x, or p in their own countries could easily be off by several percentage points in either direction, enough to flip the signs of the corresponding three terms — any one of which could change the sign of the derivative of the objective function — in each of equations *(2)* through *(5)*. Thus, it is entirely possible that the country could ask its partners to expand or agree to a partner's request that it itself expand when these changes would, in fact, move the economy in the wrong direction.

To take one historical example, in the late 1970s, US policymakers, looking at the available economic data, concluded that the problem of the time was insufficient growth in the world economy. This assumption was the basis of the 1978 *Bonn summit agreement* for coordinated expansion with Japan and Europe, (Germany in particular). By the end of the decade, the consensus had become that the top priority was fighting inflation, not promoting real growth. A natural way of interpreting the view — widely held in Germany at least — that the result of the Bonn-coordinated expanion turned out in retrospect to have been detrimental in that unanticipated developments, particularly the large increase in oil prices associated with the sudden Iranian crisis of 1979, moved the world economy to a highly inflactionary position where expansion was no longer called for (23).

The second sort of uncertainty present in the equations is uncertainty regarding the proper weights, w_x and w_p, to put on the target variables in the objective function (24). This problem is even greater than the problem of assigning optimal values to the target

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(23) Another unexpected development in the late 1970s was the downward shift in the demand for money in the United States. This disturbance, like the oil shock, meant that the planned growth rate of money turned out to be more inflationary than expected.

(24) One way to obtain estimates for these weights is to follow OUDIZ and SACHS [41], who assume that as of 1984, policymakers were optimizing their objective functions in a Nash equilibrium and infer the welfare weights they must have had in order to produce the observed outcomes for output, inflation, and the current account.The estimates turn out to be very sensitive to such things as the model of the economy that the policymakers are assumed to have used. (To equate the inferred weights with the actual rates, as Oudiz and Sachs do, requires not only that the policymakers were indeed seeking to optimize in a Nash equilibrium in that particular year but also that they knew the correct model, the correct weights, and the correct position of the economy relative to the optimum.)

variables. In a society in which the weights that individual actors place on inflation (or the current account) vary from zero to infinity, the likelihood is very high that any given government is using weights that differ from the "correct" ones that would follow from any given criterion. One can see from the equations that, for example, putting insufficient weight on fighting inflation has the same effect as underestimating the baseline inflation rate; thus, the coordinating policymaker may ask his trading partners to adopt expansionary policies when contractionary policies are in fact called for. This is precisely the mistake that, by 1980, some people concluded had been made by the United States. From the viewpoint of the Republicans who were elected to the presidency in that year or the Social Democrats who came to power in Germany two years later, the policymakers who had agreed to coordinated "reflation" at the Bonn Summit of 1978 has put insufficient weight on the objective of price stability.

The third sort of uncertainty pertains to the policy multipliers, the derivatives Y_m, Y_g, and so on in equations *(2)* to *(5a)*, which reflect the effect on the target variables of changes in the money supply and government expenditure. Any given government is likely to be using policy multipliers that differ substantially from the "true" ones and that may even be incorrect in sign. Consider the tremendous variation in multipliers according to different schools of thought and even according to different estimates in the models of mainstream macroeconomists. They cannot all be correct, and it seems highly probable that no single model is exactly right (25).

It is possible to illustrate in some detail the potential range of multiplier estimates. In a recent exercise conducted at the Brookings Institution, 12 leading econometric models of the international macro-

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(25) The German view that the 1978 Bonn Summit entailed joint "reflation" that was, in retrospect, inappropriate was used above to illustrate, alternatively, uncertainty about the baseline forecast (the unanticipated oil shock of 1979) and uncertainty about the objective function (the proper weight to be placed on inflation versus growth). A third possible interpretation is model uncertainty: the Germans believe that the slope of their aggregate supply curve turned out to be steeper than they, or at least the Americans, thought it would at the time. This interpretation is plausible if one believes that the German labor market is characterized by a high degree of real wage rigidity, as was pointed out by BRANSON and ROTEMBERG [4].

economy simulated the effects of specific policy changes in the United States and in the rest of the OECD (Bryant *et* Al. [7]) (26).

The variation in the estimates was large, not just in magnitude but also in sign. The effect of fiscal or monetary expansion on domestic output and inflation was, howerver, usually at least of the positive sign that one would expect (27). Disagreement among the models became much more common when we it came to the transmission of international effects, although the areas of greatest disagreement were not those the theoretical literature might have led one to expect. For exampt, US fiscal expansion was transmitted positively to the rest of the OECD in 10 out of 11 models and an expansion in the other countries was transmitted positively to the United States in 9 out of 10, whereas in theory fiscal transmission can easily be negative (28). The greatest amount of disagreement was on the effect of a monetary expansion on the domestic current account and, therefore, on the foreign current account and output level. There are two conflicting effects here: the monetary expansion raises income and therefore imports, but it also depreciates the currency, which tends to improve the trade balance (29). It turned out that a US monetary expansion worsened the current account in 8 out of 11 models and a monetary expansion in the other OECD countries worsened their current accounts in 5 out of 10 models (30). Despite disagreements such as these, what happens if US, European, and Japanese policymakers proceed with coordination efforts? Frankel

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(26) The models used were the Federal Reserve Board's Multi-Country model, the European Economic Community's Compact model, the Japanese Economic Planning Agency model, the *Project Link* model, Patrick Minford's Liverpool Model, the McKibbon-Sachs Global model, the *Sims-Litterman Var model*, the OECD's Interlink model, John Taylor's model, the Wharton Econometrics model, and the *Data Resources, Inc. model.*

(27) Even here, there were exceptions when it came to inflation. The *Var*, WHARTON, and LINK models sometimes showed expansion as causing a reduction in the CPI (probably because of effects via markup pricing).

(28) For example, if capital mobility is sufficiently low and a depreciation of the domestic currency is contractionary for the foreign country.

(29) In the Mundell-Fleming model, the net effect on the current account must be positive because reduction in interest rates causes a net capital outflow, which under a floating exchange rate implies an increase in the current-account balance.

(30) In most of the models, the rest of the Mundell-Fleming transmission mechanism was also reversed: that is, the foreign current account and foreign income rose, rather than fell.

and Rockett [19] and Frankel [14] and [15] use the Brookings simulations and the welfare weights from Oudiz and Sachs [40] to consider the possibilities when governments coordinate but use conflicting models. In general, countries will be able to find a package of coordinated policy changes that each believes will leave it better off, even though each has a different view of the effects and thus may not understand why the others are willing to go along with the package. The actual effects depend on what the true model is. If one considers 10 possible models, 1,000 combinations can be used to represent the beliefs of the US policymakers, the beliefs of non-US policymakers, and reality. Monetary coordination results in gains for the United States in 546 cases, losses in 321 cases, and no effect on the objective functions (to four significant digits) in 133 cases. Coordination results in gains for the rest of the OECD countries in 539 cases, losses in 327, and no effect in 134.

Thus, a cooperative package of policy changes that each country thinks will benefit it could, ex post, easily turn out to make things worse rather than better. The baseline level of output may differ from what is expected, or the optimum level (of, for example, potential output) may vary from the anticipated level, or a foreign expansion of monetary policy may turn out to have an effect on domestic otput that is different from what expected.

Moreover, uncertainty greatly complicates the enforcement problem. Recall the earlier conclusion that to enable compliance to be monitored, the agreement must involve the explicit setting of observable performance criteria. Two comments must now be made. First, policymakers do not have direct control over the variables that referred to here as "their policies." Central banks cannot determine the money supply precisely because it may be subject to disturbances within the banking system or in the wider economy's demand for money. Nor can specific policymakers in international negotiations determine their country's fiscal policies precisely. For this reason, it can be difficult to hold policymakers accountable if the policy variables deviate from the cooperative bargain.

Second, ex ante uncertainty means that there will be some countries that face an especially great temptation to cheat because they turn out ex post to lose a lot from abiding by the agreement (a lot

relative to unilaterally violating the agreement and perhaps also relative to never having made it to begin with). In such circumstances, the short-run gains from abrogating may outweigh the longer-term gains from continued cooperation.

Thus, for the parties to be held accountable, the variables to which they commit their countries must, to the maximum extent possible, be both observable and under the control of government authorities — in particular under the control of those authorities involved in the international negotiations (31). Otherwise, the national authorities can always claim that a failure to satisfy a performance criterion was beyond their control. It is not, however, essential that the variables be under the precise short-run control of the authorities, especially if compliance with the agreement is to be checked, say, once a year at annual IMF review or at summit meetings of the heads of state or twice a year at meetings of the finance ministers. It is essential only that there be an unambiguous sign to the relationship between the policy instruments that *are* under direct control and the variable to which the parties commit themselves and that the lags in the relationship not be too long. When the variable begins to deviate seriously from the agreed-on range, the policymakers should begin to adjust their policy instruments accordingly. Then they can be held accountable at the end of the year for any large deviations from the agreement.

The next condition on the variables to which policymakers must commit themselves pulls in the opposite direction. The variables specified by the agreement must be tied closely enough to the target variables in the ultimate objective function so that if there is an unexpected disturbance in one of the economic relationships (or if one of the multipliers turns out to be different from what was expected), the country will not be drastically harmed. If for example, a country commits itself to a specific number for its monetary base or the money

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(31) It is for this reason that when the International Monetary Fund (IMF) negotiates a letter of intent with the finance minister of a borrowing country, the "performance criteria" that are agreed on tend to be variables directly under the control of the authorities, such as the growth rate of the monetary base, rather than variables that are harder to control, such as the broad money supply, let alone the ultimate target variables such as inflation.

supply and subsequent shifts in the money multiplier or velocity translate that number into a severe and needless recession, it is obvious that the country will be sorely tempted to break its commitment. Just imagine if the Federal Reserve's short-lived public commitment in the early 1980s to a regime of a low and stable *M*1 growth rate had been made as part of an international agreement. Would the American public have accepted prolonging the 1981-1982 recession for another four years for the sake of an international agreement predicated on an erroneous forecast of velocity?

There must be a similar link between the variables that party commits itself to and the *other* countries' target variables. If partners stick to their money growth targets, another country will not be much impressed if the continued commitment turns out to be disavantageous to itself (for example, because a disturbance moves it to the overly inflationary side of full employment or because the partner's money growth turns out to be transmitted negatively rather than positively).

1.6 *The Choice of Indicators: A Reprise*

As noted earlier, the G7 list of indicators is too long to be useful for enforcing an agreement. Could it be winnowed down to a practical number? There seems little point in doing so since no item on the list is a good candidate to be the single variable on which negotiation under a future coordination regime would focus.

1. - Real output, employment, inflation, and the trade balance are less directly affected by policy instruments than is nominal GNP; moreover, focusing exclusively on any one of them would destabilize the others.

2. - The money supply is more under the control of the authorities (at least on an annual basis) but is much less directly linked to target variables; it is one unambiguous step further away from the two fundamental target variables of real output and price level than is nominal GNP. (That step is the existence of shifts in velocity, as discussed above and demonstrated in the appendix). Furthermore, as shown above, the effects of money on all three target variables

(output, price level, and trade balance) in the other country are completely ambiguous in sign. Thus, the money supply is an even less suitable choice of focus for international coordination than for domestic policymaking.

3. - Fiscal policy is more easily linked to the foreign target variables (or would be if the high-employment deficit were used as the indicator). But it is less directly under the control of the policymakers than is the money supply. Among the G7 countries, the inability to control the budget deficit has been most striking in the case of the United States in the 1980s. Feldstein (1987, pp. 23-4) suggests why the United States will never be able to participate in serious international bargaining over fiscal policy: «A primary reason why such macroeconomic policy coordination cannot work as envisioned is that the United States is constitutionally incapable of participating in such a negotiation. The separation of powers in the American form of government means that the Secretary of the Treasury cannot promise to reduce or expand the budget deficit or to change tax rules. This power does not rest with the President or the administration but depends on legislative agreement between the President and the Congress».

4. - Exchange rate policy is, of course, a very large topic. But one can easily note some difficulties with its being the single indicator that G7 countries commit themselves to instabilizing policy coordination agreements. If, say, the dollar rate deutsche mark begins to stray outside the announced target zone, which of the two governments should suffer sanctions or a loss in reputation? The "n-1 problem" (Miller and Williamson [47]) means that one country — presumably the United States — would have to sit out, which is not what is wanted. Countries could commit themselves to certain targets for their foreign exchange intervention, or more generally to monetary and fiscal policies that in theory would determine the exchange rate. But, as already noted, the link between macroeconomic policies and the exchange rate is fraught with even greater uncertainty than the link between output and inflation.

One must thus raise the question of whether the exchange rate has as great a claim as the other target variables to being in the

objective function. In the second part of the appendix to this paper, the exchange rate is added in to the objective function along with output and the price level. It is shown that the penalty for stabilizing the exchange rate is being saddled with a monetary policy that destabilizes the overall price level relative to what happens with a regime of stabilizing nominal GNP. Thus, to opt for a fixed exchange rate regime, one must put tremendous weight on the exchange rate objective. (Such a person must be prepared to argue that a 10% fluctuation in the exchange rate causes greater trouble than a 10% fluctuation in the price level). The only other way out is to assume that when the regime changes, much of the disturbance in the exchange rate equation will disappear rather than having to be accommodated by the money supply (32).

5. - Of the remaining three indicators on the G7 list (the interest rate, international reserves, and the price of gold) the price of gold is the only one that has been proposed as a candidate for the sole variable around which countries should coordinate. Proponents of a central role for gold do not seem to appreciate that shifts in the demand function for gold and in the other economic relationships that link it to the target variables are even more unstablizing than shifts in the demand for money or the demand for foreign exchange, and that they are likely to remain so in the future. The appendix's demonstration of the superiority of choosing nominal GNP over the price of foreign exchange applies just as much vis-à-vis the price of gold. In a world where there are frequent shifts in demand among money, foreign currency, and gold, stabilizing any one of these variables means allowing the shifts to be transmitted more forcefully to the rest of the economy.

This does not mean that the price of gold (or of other minerals or agricultural commodities) is not a useful indicator in the sense of being a good early warning signal of the likely future course of the

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(32) MILLER [39] and WILLIAMSON ([47], pp. 54-5; do precisely this; they assume that there is a large "fad" component to exchange rate fluctuations under the current floating regime,and that it would disppear under their target zone proposal. The idea is not absurd. But it certainly stacks the deck in an empirical comparison of the two regimes.

overall price level, which is the true target variable (33). In this sense, such prices belong with the money supply, the interest rate, the yield curve, and many other leading indicators on the list of variables that policymakers may want to monitor on a short-term basis in attempting to hit their targets, whether under a regime of coordination, decentralized national policymaking with some commitment to a nominal anchor, or complete discretion.

In short, if coordination is to go beyond the stage of rhetoric to a small-scale commitment, which mean some degree of international commitment to a single variable, then nominal GNP (or nominal demand) dominates each of the indicators that the G7 have apparently been discussing as the natural candidate for that variable.

2. - How International Nominal GNP Targeting (INT) Would Work

The INT framework laid out in Frankel [15], [16] is a very simple one. The G7 ministers would focus their negotiations not on the 10 or 11 indicators currently on their list but on nominal demand (defined as nominal GNP minus the balance on goods and services). At each meeting the national authorities would: *a)* commit themselves, without any obsessively great degree of firmness, to target growth rates (or ranges) for the level of nominal GNP for five years into the future, and *b)* commit themselves, with somewhat greater firmess, to targets for their countries' levels of nominal demand for the coming year.

In the first stage, — that is, the early 1990s, there would be no explicit enforcement mechanism. But the targets would be publicly announced, and if a country's growth rate of nominal demand turned out to have erred significantly in one direction or the other, the fact would be noted disapprovingly at the next G7 meeting. (This does not happen under the current system). If this first stage was successful, a future stage might add another variable or two to the list, or countries

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(33) Indeed, there is some evidence that the prices of gold and other commodities react instantaneously to changes in expectations regarding whether monetary policy will be tight or loose in the future (FRANKEL and HARDOUVELIS, [18]).

might even commit themselves firmly to specific policy responses if a level of nominal demand begins to stray from the year's target.

A plan that called for targeting nominal GNP, rather than nominal demand, might be more readily and more widely understood and thus might stand a better chance of succeeding politically. The advantages of focusing on nominal demand is the assumption that when the cooperative equilibrium entails expansion, countries need to be discouraged from the temptation to accomplish the growth of output through net foreign demand (for example, through protectionist trade measures) as opposed to domestic demand. In some years, the cooperative equilibrium might entail contraction rather than expansion, and then a nominal GNP target could be preferable to a nominal demand target. But it is usually thought that the political pressure for protectionist trade remedies is greater in recessions than in expansions, a fact that points to nominal demand as the superior choice (34).

2.1 *Monetary Policy or Fiscal Policy?*

Countries could attain their nominal GNP or nominal demand targets through any of several routes. One possibility is the Williamson and Miller [47] blueprint, which assigns fiscal policy in each country the responsibility for attaining a nominal demand target (and assigns monetary policy in each country responsibility for the exchange rate) (35). But at least one serious problem could arise with explicitly specifying fiscal policy as the instrument with which countries are expected to attain the nominal demand targets that they agreed to. If an economy strays from the target, the authorities will claim that it is not politically possible to adjust fiscal policy quickly. Such claims will

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(34) Besides subtracting from total GNP that part going to the foreign sector (the trade balance) it might also be a good idea to subtract the part going to inventories, as suggested by GORDON [26]).

(35) The Miller-Williamson blueprint also specifies that the G7 should set the *average* level of their interest rates so as to attain a target for the *aggregate* level of their GNPs. This part of their plan cooperative is similar to the first part of my proposal. It is my second part cooperative yearly setting of each country's nominal demand target, to be attained primarily through monetay policy — that differs the most from the Miller-Williamson plan (aside from my setting exchange rate stability aside as a separable issue).

be completely credible — in fact, they will generally be true (36). Thus, an agreement is more likely to stick if monetary policy, rather than fiscal policy, is specified as the policy instrument countries are expected to use.

Even if fiscal policy is assumed to be no more subject to lags and political encumbrances than monetary policy, there is another reason for assigning monetary policy to the nominal demand target. If countries also pursue trade balance targets (and it seems that they do, whether or not they should), then the classic assignment problem is relevant. The general rule is to assign responsibility for the trade balance target to the policy instrument that has a relatively greater effect on it (Mundell, [39]). I agree with Boughton [3] that under modern conditions of floating exchange rates, which work to decrease the effectiveness of monetary policy and to increase the effectiveness of fiscal policy with respect to the trade balance, following that rule means assigning fiscal policy to the trade balance target and monetary policy to the domestic target.

2.2 *Consideration of Specific Instruments*

What is the precise instrument of monetary policy that should be adjusted when nominal demand drifts away from the target? The monetary base or level of unborrowed reserves would be better than the broader monetary aggregates because the central bank controls the former more directly. For the same reason, the short-term interest rate is another possible instrument.

Working in the context of closed-economy policymaking McCallum ([33], p. 15) has suggested a specific feedback rule that might do well here. His proposal is that for each percentage point that nominal GNP deviates from its target in a given quarter, the monetary

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(36) For attempts to evaluate empirically the stabilizing properties of the blueprint plan, see MILLER and WILLIAMSON [39] and FRENKEL, GOLDSTEIN, and MASSON ([21, pp. 33-49). FRENKEL and GOLDSTEIN [20] survey target zone proposals. Miller and Williamson also consider a floating rate regime and the MCKINNON [36] proposals to use monetary policy to target the aggregate money supply — or in a later version, the aggregate price level — among the G3 countries. MCKIBBON and SACHS [35] also compare these regimes. I am not aware of empirical work evaluation the likely outcome if countries cooperatively set nominal GNP targets and use monetary policy to attain them.

base be expanded an additional 0.25% over the next quarter. He also suggests setting a trend growth rate in the target of 3% per year and subtracting from this the average growth rate of the base velocity over the preceding four years. An alternative possibility is to replace the 3% target with «a number to be negotiated for each member of the G7 each year, with a planned long-run tendency of 3%».

The central bank would be better able to hit its annual nominal demand target if it was allowed to respond to information in addition to the most recent monthly figure for nominal demand itself. Ben Friedman ([22], pp. 183-4), for example, shows that indicators such as the money supply and the stock of credit can be used to increase the accuracy of predictions of deviations from a nominal income target. One could add many other leading indicators including a number of the those from the G7 list. The conclusion seems to be that it would be best to leave the means of attaining the nominal demand target up to the national authorities, rather than requiring that they follow a particular rule such as McCallum's.

On the other hand, it would be desirable to go beyond the proofs in the appendix, which demonstrate the superiority of targeting nominal GNP only when one knows the policy multipliers and takes as given the ability of the authorities to hit their targets. The evident next step is to try out the INT proposal, using simulations of one or more econometric models of the world macroeconomy, to see how it fares relative to other proposals.

APPENDIX

A Comparative Analysis of NIT Targeting and Other Policy Coordination Regimes

This appendix compares four possible policy regimes: 1) floating exchange rates, with full discretion by national policymakers (the current regime); 2) a rigid money suppley rule; 3) a rigid nominal GNP rule, and 4) a rigid exchange rate (or price of gold) rule (37). The approach, which incorporates advantages to both rules and discretion, follows Rogoff [43] and Fischer [12], who, in turn, followed Kydland and Prescott [31] and Barro and Gordon [2].

Throughout, we assume an aggregate supply relationship:

$$y = y^* + b(p - p^e) + u \qquad (A1)$$

where y represents outps, y^* potential output, p the price level, p^e the expected price level, and u a supply disturbance, with all variables expressed as logs. Notice that, alternatively, p and p^e could be the actual and expected inflation rates respectively.

1. - Output and the Price Level in the Objective Function

We begin without the exchange rate. The loss function is simply:

$$L = ap^2 + (y - ky^*)^2 \qquad (A2)$$

where: a is the weight assigned to the inflation objective. We assume that the lagged or expected price level relative to which p is measured

(37) The proponents of each of these nominal anchors of ten have in mind a target zone system, not a rigid rule. The assumption of rigid rules is used here only to make the analysis simpler.

can be normalized to zero. We impose $k > 1$, which builds in an expansionary bias to discretionary policymaking.

$$(A3) \qquad L = ap^2 + [y^*(1 - k) + b(p - p^e) + u]^2$$

1.1 *Discretionary Policy (Case 1)*

Under a regime of full discretion, the policymaker chooses in each period aggregate demand so as to minimize that period's L, with p^e given.

$$(A4) \quad (1/2)\, dL/dp = ap + [y^*(1 - k) + b(p - p^e) + u]b = 0.$$

$$(A5) \qquad p = [-y^*(1 - k)b + b^2p^e - bu] / [a + b^2]$$

Under the assumption of rational expectations:

$$(A6) \qquad p^e = Ep = -y^*(1 - k)b/a$$

So we can solve equation *(A5)* for the price level:

$$(A7) \qquad p = -y^*(1 - k)[b/a] - ub/[a + b^2]$$

From equation *(A2)*, we then work out the expected loss function to:

$$(A8) \qquad EL = (1 + b^2/a)[y^*(1 - k)]^2 + [a/(a + b^2)]\ \mathrm{var}(u).$$

The first term represents the inflationary bias in the system, and the second represents the effect of the supply disturbance after the authorities have chosen the optimal split between inflation and output.

1.2 *Money Rule (Case 2)*

In considering alternative regimes, we must be explicit about the money market equilibrium condition. (It was implicit in *Case 1* that

the money supply, m, was the variable that the authorities were using to control demand.)

(A9) $$m = p + y - v$$

where v represents velocity shocks. (We assume that v is not correlated with u.) If the authorities precommit themselves to a fixed money growth rule, in order to reduce expected inflation in long-run equilibrium, then they must give up on affecting y. The optimal money growth rate is the one that sets Ep at the target value for p, which is zero. Thus, they will set the money supply, m, at Ey, which in this case is y^*. The aggregate demand equation thus becomes:

(A10) $$p + y = y^* + v.$$

Combining this equivalence with the aggregate supply relationship, equation *(A1)*, the equilibrium is given by:

(A11) $$y = y^* + (u + bv)/(1 + b), \qquad p = (v - u)/(1 + b)$$

Substituting into equation *(A2)*, we find that the expected loss function is:

(A12) $$EL = (1 - k)^2 y^{*2} + [(1 + a)\ \text{var}\ (u) + (a + b^2)\ \text{var}\ (v)]/(1 + b)^2$$

The first term is smaller than the corresponding term in the discretion case because the precommitment reduces expected inflation. But the second term is probably larger because the authorities have given up the ability to respond to money demand shocks. Which regime is better depends on how big the shocks are and on the size of the weight, a, placed on inflation-fighting.

1.3 *Nominal GNP Rule (Case 3)*

In the case of a nominal GNP rule, the authorities vary the money supply in such a way as to accommodate velocity shocks. In other

words, equation *(A10)* is replaced by the condition that $p + y$ is constant. The solution is the same as in *Case 2*, but the v disturbance is dropped. Thus, the expected loss collapses from equation *(A12)* to:

(A13) $$EL = (1 - k)^2 y^{*2} + [(1 + a)/(1 + b)^2] \text{ var } (u)$$

This, outcome unambiguously dominates the result of the money rule case. Without knowing var(u) or (a), however, it is still not possible to say that this rule dominates the outcome of the discretion case. It is quite likely, especially if the variance of u is large, that an absolute commitment to a rule would be unwisely constraining. Hence, the argument for a target zone rather than a single number, and for subjecting the chair person of the central bank to a mere loss of reputation, rather than a firing squad, if he or she misses the target. Yet it seems clear that, to whatever extent the country chooses to commit itself to a nominal anchor, nominal GNP dominates the money supply as the candidate for the anchor.

2. - Adding the Exchange Rate (or the Price of Gold) to the Objective Function

We reconsider here a likely objection to choosing nominal GNP or nominal demand as the focus of international coordination: that doing so neglects the exchange rate. The alternative of setting monetary policy so as to stabilize the exchange rate will not look attractive unless the exchange rate enters the objective function, perhaps indirectly via the consumer price index or the trade balance. Here we confront the argument head on and include the exchange rate directly in the loss function, along with output and the price level. Thus, we replace equation *(A2)* with

(A14) $$L = ap^2 + (y - ky^*)^2 + cs^2,$$

where s is the spot exchange rate measured relative to some equilibrium or target value and c is the weight placed on exchange rate stability *per se*.

There is no point in specifying an elaborate model of the exchange rate. All the empirical results say that most of the variation in the exchange rate cannot be explained (even ex post) by measurable macroeconomic variables and thus can only be attributed to an error term that we here call *e*. But we must include the money supply in the equation; otherwise, we do not allow the authorities the possibility of affecting the exchange rate. Thus, the equation is simply:

$$s = m - y + e \tag{A15}$$

where e is assumed to be uncorrelated with the other disturbances. (Though our primary interpretation of *s* is as the spot price of foreign currency, a second possible interpretation of this variable in what follows is as the spot price of gold. It is hard to see why that price should enter directly into the objective function, even more so than the exchange rate, but this simply biases our results in favour of the position of the gold bugs.)

From equation *(A9)*, we can achieve by situation:

$$s = p - v + e \tag{A16}$$

We assume that equation *(A1)*, the aggregate supply relationship, holds as before. So we can write the loss function equation *(A14)*, as

$$L = ap^2 + [(1 - k)y^* + b(p - p^e) + u]^2 + \\ + c(p - v + e)^2 \tag{A17}$$

Now we proceed as before to consider possible regimes.

2.1 *Discretionary Policy (Case 1)*

We add the exchange rate to equation *(A4)*.

$$(1/2)\, dL/dp = ap + [y^*(1 - k) + b(p - p^e) + u]b + \\ + c(p - v + e) = 0$$

Then:

$$(A18) \qquad p = [-y^*(1-k)b + b^2p^e - bu + c(v-e)] / \\ / [a + b^2 + c].$$

The rationally expected p is given by $p^e = Ep$:

$$(A19) \qquad p^e = -(1-k)by^* / (a + c)$$

Substituting into equation *(A19)* yields:

$$(A20) \qquad p = -(1-k)y^*[b / (a + c)] + \\ + [c(v - e) - bu] / [a + b^2 + c]$$

The loss function is:

$$(A21) \qquad EL = [(1-k)y^*]^2[(a + b^2 + c) / (a + c)] + \\ + \{(a + c)\,\mathrm{var}(u) + c(a + b^2)[\mathrm{var}(v) + \\ + \mathrm{var}(e)]\} / (a + b^2 + c)$$

2.2 *Money Rule (Case 2)*

As when we considered a money rule before, the authorities set m at y^*, so that expected inflation is zero and equation *(A10)* applies. Thus, the same solution — equation *(A11)* for y and p — also applies. The exchange rate is given by substituting the solution for p from equation *(A11)* into equation *(A16)*:

$$(A22) \qquad s = e - [(u + bv) / (1 + b)]$$

The additional s term is the only difference from equation (A12) in the expected loss function:

$$(A23) \quad EL = [y^*(1-k)]^2 + [(1 + a + c) / (1 + b^2)]\,\mathrm{var}(u) + \\ + [(a + b^2 + cb^2) / (1 + b)^2]\,\mathrm{var}(v) + (c)\,\mathrm{var}(e)$$

Again the comparison of this outcome with that of a policy of discretion depends on the various magnitudes.

2.3 *Nominal GNP Rule (Case 3)*

When the monetary authorities are able to vary m so as to keep $p + y$ constant, the velocity shocks, v, drop out. The expected loss function becomes:

$$EL = [y^*(1 - k)]^2 + [(1 + a + c)/ / (1 + b^2] \operatorname{var}(u) + c \operatorname{var}(e) \tag{A24}$$

As before, the nominal GNP rule unambiguously dominates the money rule.

In practice, the e shocks in the exchange rate equation are very large. They certainly dwarf the u shocks in the aggregate supply equation. (The exchange rate often moves 10% in a year without corresponding movements in the money supply or other observable macroeconomic variables; try to imagine similar movements of real output.) If the weight c on the s target is substantial, then the last term in the expected loss equation may be important.

2.4 *Exchange Rate or Price of Gold Rule (Case 4)*

If the authorities fix the exchange rate, they again cannot affect y in long-run equilibrium. But now it is the exchange rate that they peg in such a way that $Ep = 0$, which from exquation *(A16)* means $s = 0$. The ex post price level is then given by:

$$p = v - e. \tag{A25}$$

From equation *(A1)*:

$$y = y^* + b(v - e) + u \tag{A26}$$

From equation *(A14)*:

$$(A27) \qquad EL = (a + b^2)\,\mathrm{var}\,(v - e) + [y^*(1 - k)]^2 + \mathrm{var}\,(u).$$

The coefficient on var (e) is $(a + b^2)$, compared with the coefficient c in the expected loss, equation *(A24)*, under the nominal GNP rule. The point was made above that in practice e shocks dwarf u shocks. Continuing this reasoning, even if v shocks are also small and $a = c$ (the objective function puts no greater weight on a 10% fluctuation of the price level than on a 10% fluctuation of the exchange rate — which is an extremely conservative assumption — the expected loss from fixing s will be greater than the expected loss from fixing nominal GNP. The reason is that under an exhange rate rule, e shocks are allowed to affect the money supply and therefore the overall price level. Once one allows for v shocks (which are probably between u and e shocks in magnitude), the case for nominal GNP targeting is even stronger. One would have to put extraordinarily high weight on the exchange rate objective to prefer an exchange rate rule.

Under the secondary interpretation of s as the price of gold, rather than the price of foreign exchange, the e shocks are likely to be at least as large, and the argument for its receiving heavy weight directly in the objective function, is even more difficult to make. In short, the nominal GNP rule seems to dominate all the other candidates for nominal target: the money supply, the exchange rate, and the price of gold.

BIBLIOGRAPHY

[1] BARRO R.: «Recent Developments in the Theory of Rules versus Discretion», *The Economic Journal*, n. 96, January 1986, pp. 23-37.

[2] BARRO R. - GORDON D.: «A Positive Theory of Monetary Policy in a Natural Rate Model», *Journal of Political Economy*, vol. 91, August 1983, pp. 589-610.

[3] BOUGHTON J.: «Policy Assignment Strategies with Somewhat Flexible Exchange Rates», in EICHENGREEN B. - MILLER M. - PORTES R. (eds.): *Exchange Rate Regimes and Macroeconomic Policy*, Forthcoming, 1989.

[4] BRANSON W. - ROTEMBERG J.: «International Adjustment with Wage Rigidity», *European Economic Review*, vol. 13, May 1980, pp. 309-37.

[5] BRITTAN S.: *The Role and Limits of Government*, Rev. ed., London, Wildwood House, 1987.

[6] BRYANT R.: «Intragovernmental Coordination of Economic Policies: An Interim Stocktaking», *International Monetary Cooperation: Essays in Honor of H.C. Wallich*, Princeton (NJ), Princeton University Press, *Essays in International Finance*, n. 169, 1987.

[7] BRYANT R. *et* AL., (eds.): *Empirical Macroeconomics for Interdependent Economies*. Washington, (DC), Brookings Institution, 1988.

[8] CORDEN W.M.: «The Logic of the International Monetary Non-system» in MACHLUP F. - MULLER-GROELING H. (eds.): *Reflections on a Troubled World Economy: Essays in Honor of H. Giersch*, London, MacMillan, 1983, pp. 59-74.

[9] DORNBUSCH R. - FRANKEL J.: «The Flexible Exchange Rate System: Experience and Alternatives», Washington (DC), National Bureau of Economic Research, *Working Paper* n. 2464, 1988, Reprinted in BORNER S. (ed.): *International Finance and Trade in a Polycentric World*, London, MacMillan, 1988.

[10] FELDSTEIN M.: «The World Economy», *The Economist*, n. 11, June 1983.

[11] ——: «Distinguished Lecture on Economics in Government: Thinking about International Economic Coordination», *Journal of Economic Perspectives*, n. 2. Spring 1988, pp. 3-13.

[12] FISCHER S.: «Rules vs. Discretion in Monetary Policy», Washington (DC), National Bureau of Economic Research, *Working Paper*, n. 2518, 1988.

[13] ——: «International Macroeconomic Policy Coordination», in FELDSTEIN M. (ed.): *International Policy Coordination*, Chicago, University of Chicago Press, 1988.

[14] FRANKEL J.: «Obstacles to International Macroeconomic Policy Coordination», Princeton, Princeton University Press, *Studies in International Finance*, n. 64, 1988.

[15] ——: «A Proposal for Policy Coordination: International Nominal Targeting (INT)», Bald Peak, N.H., Federal Reserve Bank of Boston, *Conference on International Payments Imbalances*, 1988.

[16] ——: «A Modest Proposal for International Nominal Targeting (INT)», National Boureau of Economic Research, *Working Paper*, n. 2856, Forthcoming in BRANSON W. - FRENKEL J. - GOLDSTEIN M. (eds.): *International Policy Coordination and Exchange Rate Fluctuation*, Chicago, University of Chicago Press, 1989.

[17] ——: «Overcoming Obstacles to Policy Coordination: International Nominal Targeting (INT)», Cambridge (Mass), National Boureau of Economic Research, *Conference Report*, 1989.

[18] FRANKEL J. - HARDOUVELIS G.: «Commodity Prices, Money Surprises, and Fed Credibility», *Journal of Money, Credit and Banking*, vol. 17 n. 4, November, 1985, pp. 425-38.

[19] FRANKEL J. - ROCKETT K.: «International Macroeconomic Policy Coordination When Policy-makers Do Not Agree on the True Model», *American Economic Review*, vol. 78, June 1988, pp. 318-400.

[20] FRANKEL J. - GOLDSTEIN M.: «A Guide to Target Zones», *IImf Staff Papers*, vol. 33, December 1986, pp. 633-730.

[21] FRANKEL J. - GOLDSTEIN M. - MASSON P.: «International Coordination of Economic Policies: Scope, Methods and Effects», in *Conference on National Economic Policies and their Impact on the World Economy*, Washington (DC), International Monetary Fund, 1988.

[22] FRIEDMAN B.: «The Value of Intermediate Targets in Implementing Monetary Policy», *Price Stability and Public Policy*, Kansas City, (Mo), Federal Reserve Bank of Kansas City, 1984, pp. 169-91.

[23] FUNABASHI Y.: *Managing the Dollar: From the Plaza to the Louvre*, Washington (DC), Institute of International Economics, 1988.

[24] GIAVAZZI F. - GIOVANNINI A.: *Limiting Exchange Rate Flexibility: The European Monetary System*, Cambridge, MIT Press, 1988.

[25] GIAVAZZI F. - PAGANO M.: «The Advantage of Tying One's Hands: Ems Discipline and Central Bank Credibility», *European Economic Review*, n. 32, June 1988, pp. 1055-82.

[26] GORDON R.: «The Conduct of Domestic Monetary Policy», in ANDO A. *et* AL. (eds.): *Monetary Policy in Our Times*, Cambridge (Mass.), MIT Press, 1985, pp. 45-81.

[27] HALL R.: «Monetary Policy with an Elastic Price Standard», *Price Stability and Public Policy*, Kansas City (Mo.), Reserve Bank of Kansas City, 1985.

[28] HOLTHAM G. - HUGHES HALLETT A.: «Internationl Policy Coordination and Model Uncertainty», in BRYANT R. - PORTES R. (eds.): *Global Macroeconomics: Policy Conflict and Cooperation*, London, MacMillan, 1987.

[29] KENEN P.: «Exchange Rates and Policy Coordination», Washington (DC), Brookings Institution, *Brookings Discussion Papers*, n. 61, 1987.

[30] KRUGMAN P.: «Target Zones and Exchange Rate Dynamics», Washington (DC), National Bureau of Economic Research, *Working Paper*, n. 2481, 1988.

[31] KYDLAND F. - PRESCOTT E.: «Rules Rather than Discretion: The Inconsistency of Optimal Plans», *Journal of Political Economy*, n. 85, June 1977, pp. 473-91.

[32] MCCALLUM B.: «The Case for Rules in the Conduct of Monetary Policy: A Concrete Example, Federal Reserve Bank of Richmond», *Economic Review*, September-October, 1987, pp. 10-8.

[33] ——: «Robustness Properties of a Rule for Monetary Policy», Amsterdam (NY), North Holland, *Carnegie-Rochester Conference Series on Public Policy*, Revised, February, 1988.

[34] ——: «The Role of Demand Management in the Maintenance of Full Employment», Washington, National Bureau of Economic Research, *Working Paper*, n. 2520, 1988.

[35] MCKIBBON W. - SACHS J.: «Coordination of Monetary and Fiscal Policies in the Industrial Economies», in FRENKEL J. (ed.): *International Aspects of Fiscal Policies*, Chicago, University of Chicago Press, 1988, pp. 73-120.

[36] MCKINNON R.: *An International Standard for Monetary Stabilization*, Washington (DC), Institute for International Economics, 1984.

[37] Mc KINNON R.: «Monetary and Fexchange Rate Policies for International Financial Stability: A Proposal», *Journal of Economic Perspectives*, n. 2, Winter 1988, pp. 83-103.

[38] MEADE J.: «A New Keynesian Bretton Woods», *Three Banks Review*, June 1984.

[39] MILLER M. - WILLIAMSON J.: «The International Monetary System: An Analysis of Alternative Regimes», Centre for Economic and Policy Research, *Discussion Paper*, n. 266, 1988, and *European Economic Review*, vol. 32, n. 5, June 1988, pp. 1031-48.

[40] MUNDELL R.: «The Appropriate Use of Monetary and Fiscal Policy under Fixed Exchange Rates», *IMF Staff Papers*, n. 9, March 1962, pp. 70-7.

[41] OUDIZ G. - SACHS J.: «Macroeconomic Policy Coordination Among Industrial Economies», *Brookings Papers on Economic Activity*, n. 1, 1984, pp. 1-75.

[42] PUTNAM R. - BAYNE N.: *Handing Together: The Seven Power Summits*, Cambridge (Mass.), Harvard University Press, 1987.

[43] ROGOFF K.: «Can International Monetary Policy Coordination Be Counterproductive?», *Journal of Internatinal Economics*, n. 18, March 1985, pp. 199-217.

[44] ——: «The Optimal Degree of Commitment to an Intermediate Monetary Target», *Quarterly Journal of Economics*, n. 100, November 1985, pp. 1169-89.

[45] ——: «Reputational Constraints on Monetary Policy», in BRUNNER K. - MELTZER A.H. (eds.): *Carnegie-Rochester Conference Series on Public Policy*, n. 26, Amsterdam (NY), North-Holland, 1987.

[46] TAYLOR J.: «What Would Nominal GNP Targeting Do to the Business Cycle?», *Carnegie-Rochester Conference Series on Public Policy*, n. 22, Amsterdam (NY), North-Holland 1985.

[47] WILLIAMSON J.: *The Exchange Rate System*,Washington (DC), Institute for International Economics, 1983.

[48] WILLIAMSON J. - MILLER M.: «Targets and Indicators: A Blueprint for the International Coordination of Economic Policy», Washington (DC), Institute for International Economics, *Policy Analyses in International Economics*, n. 22, 1987.

Toward a Common Monetary Standard Through the Regulation of Exchange Rates

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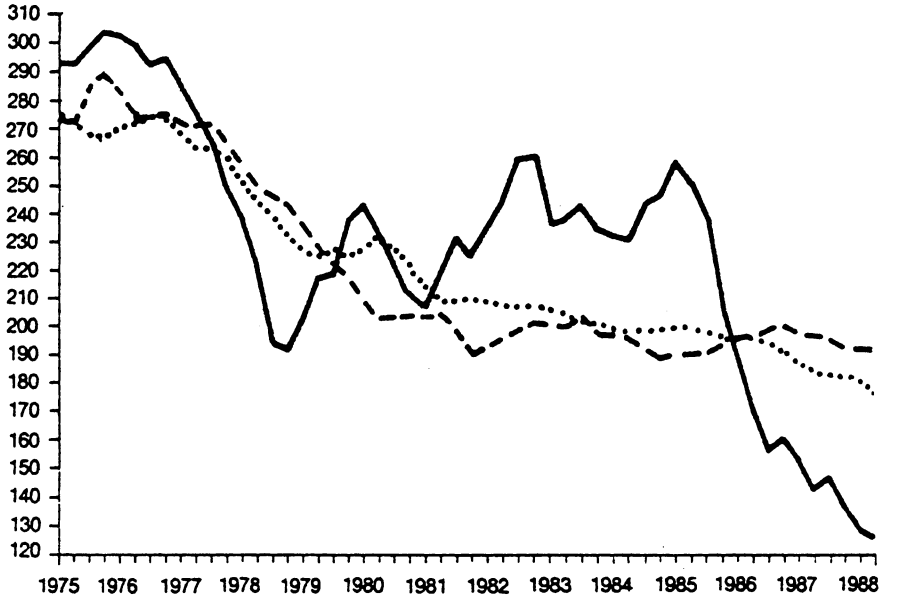
Over the past decade and a half, nothing has better illustrated the conference theme of global disequilibrium than the erratic behaviour of the exchange rates and long-term interest rates of the major industrial countries. After the Bretton Woods system of pegged exchange rates broke down in the early 1970s, the essential randomness and violence of exchange rate movements surprised almost everybody at first, but they are now expected features of life, well established in the economics literature (including the publications of the principal monetary surveillance agency, the International Monetary Fund — IMF).

The modern experience with floating exchange rates has been marked by high short-term volatility week to week and even day to day. An even more striking characteristic is the extent to which national price levels have been misaligned for prolonged periods. Graphs 1 and 2 compare movements in the actual yen/dollar and deutsche/mark/dollar exchange rates to the paths of their estimated purchasing power parities (PPPs) — those rates that would have aligned either producer price indices (PPIs) or unit labor costs (ULCs) between the United States and Japan and the United States and

(*) My thanks to David Robinson and Kenichi Ohno for their invaluable help in preparing this paper.

GRAPH 1

ACTUAL AND PPP YEN/DOLLAR EXCHANGE RATES



PPP: purchasing power parity;
PPI: producer price index;
ULC: unit labor cost.

Source: OHNO [21].

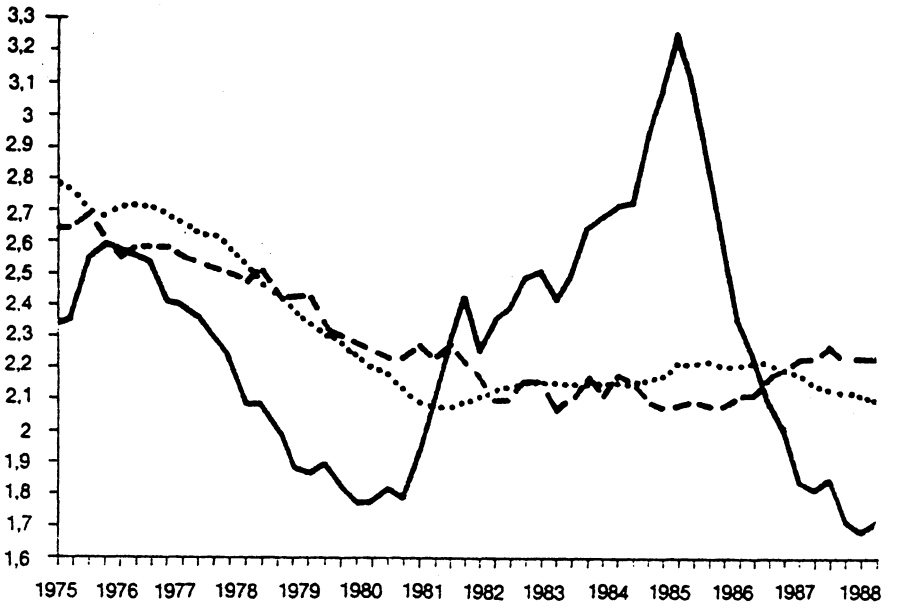
Germany (1). Deviations from PPP of 20% in either direction have been sustained, sometimes for years, with individual spikes ranging up to 40%. In the now worldwide markets for goods and many services,

(1) How best to estimate (absolute) PPP exchange rates remains contentious, but alternative statistical techniques lead to estimates similar to those in Graphs 1 and 2 (MCKINNON and OHNO [19]; OHNO [21]. More basically, substituting long-term moving averages of the yen/dollar and mark/dollar rates for the PPP rates in the figure would show similarly large deviations of current exchange rates from these long-term trends.

Advise: the numbers in square brackets refer to the Bibliography in appendix.

GRAPH 2

ACTUAL AND PPP MARK/DOLLAR EXCHANGE RATES



PPP: purchasing power parity;
PPL: producer price index;
ULC: unit labor cost.

*Source:*OHNO [21].

these variations represent tremendous swings in the international competitiveness of any country's merchants and manufacturers.

Because industrialists planning long-term investments in plant and equipment in various parts of the world cannot effectively hedge much of this exchange risk (McKinnon [19]), certain kinds of investment are inhibited while others become shorter term and more defensive. Even more vulnerable to changing exchange rates is each country's agricultural sector — a fact that induces governments to respond more immediately with protectionist measures.

1. - Exchange-Rate Regimes and Interest Rate Volatility in Historical Perspective

Exchange risk also affects investment indirectly through its impact on long-term interest rates. Relative to the situation in eras when a common worldwide monetary standard was operative, long-term interest rates under the current regime of no-par floating exchange rates have been remarkably volatile. During the period of the classical gold standard, from 1879 to 1913, nominal exchange rates were confined within their gold points — a band width of less than 1% (Table 1), which was expected to last into the distant future. Graph 3 shows that long-term national interest rates were low and close together and did not change much through time. With capital

TABLE 1

FLUCTUATION BAND FOR BILATERAL NOMINAL EXCHANGE RATES

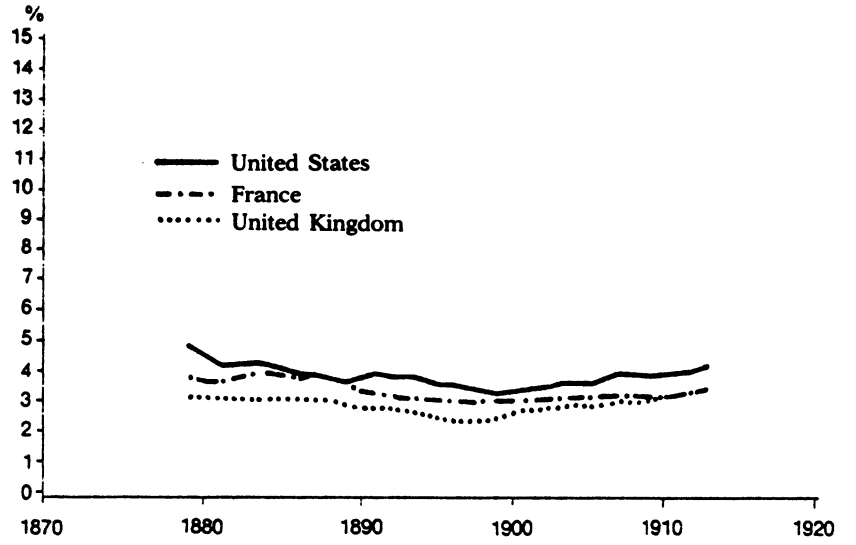
Currency	Exchange	Parity	Lower limit	Upper limit
			Gold standard (1879-1913)	
Sterling	($/£)	4.866	4.827	4.890
Franc	(Fr/$)	5.183	5.148	5.215
Mark	(DM/$)	4.198	4.168	4.218
			Bretton Woods system (1950-1970)	
Sterling	($/£)	2.800	2.772	2.828
Franc	(Fr/$)	4.937	4.887	4.986
Mark	(DM/$)	4.200	4.158	4.242
			European monetary system (1979-1989)	
Franc	(Fr/DM)	2.310	2.258	2.362

Sources: table prepared by GIOVANNINI [10]. Information on *gold standard* from Morgenstern (1959); sterling points computed for gold trade from Britain to the United States (in 1879); franc and mark points computed for trade from Paris and Berlin respectively, to New York in 1901. Information on Bretton Woods system, from *International Financial Statistics;* data refer to the year 1960. Information EMS; from *European Economy;* data refer to March 1979.

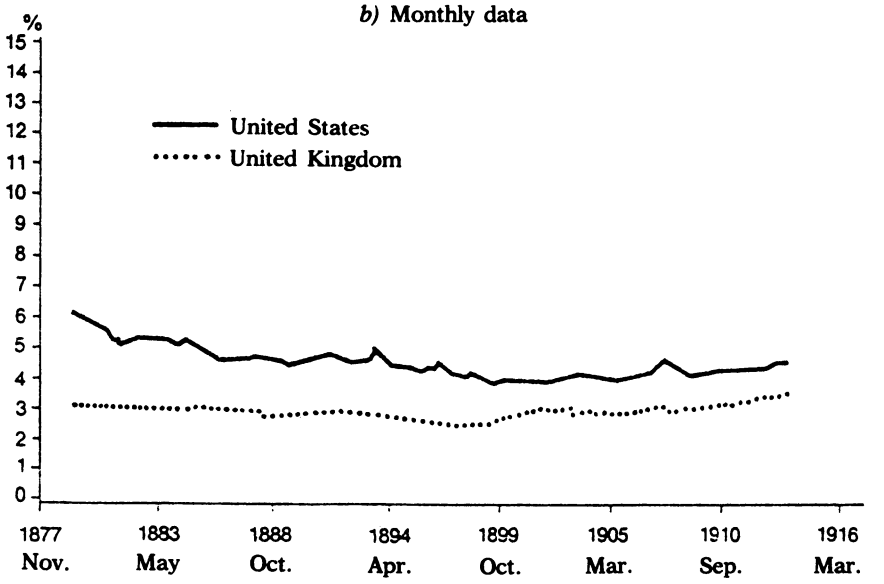
GRAPH 3

LONG-TERM INTEREST RATES UNDER THE GOLD STANDARD

a) Annual data



b) Monthly data

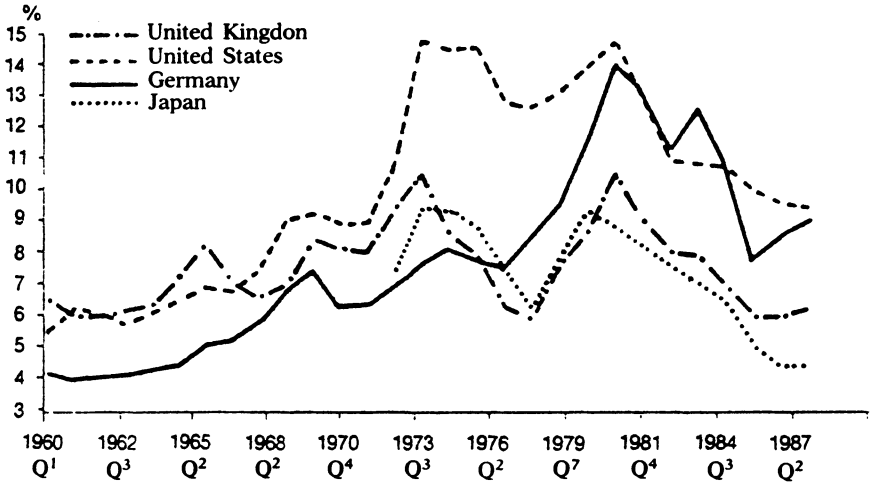


Source: see appendix.

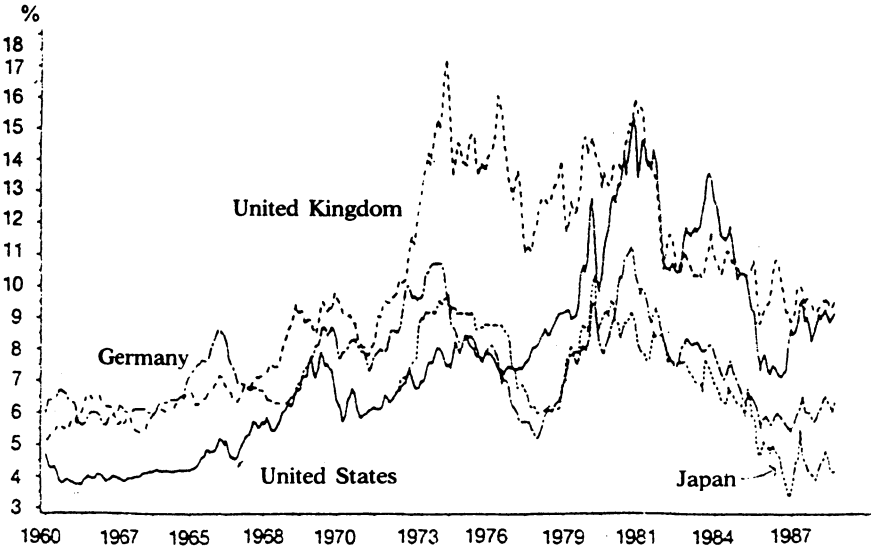
GRAPH 4

LONG-TERM GOVERNMENT BOND YIELDS, 1960-1988

a) Annual data



b) Monthly data



Source: see appendix.

even freer to move internationally in the late nineteenth century than it is now, yields on prime grade US railway bonds remained in the neighborhood of 4%; those on British consols were about 3% or slightly less; French rentes (representative of yields on other European governments' securities) were sandwiched in between.

In sharp visual contrast, Graph 4 portrays the modern experience with long-term interest rates on the government bonds of Japan, the United States, West Germany, and the United Kingdom. From 1973 to 1988, interest — rate levels were much higher, sometimes often 12 to 13%, and volatility was much greater (best seen by the monthly plots in panel of figure 4 [b]). The dispersion of interest rates across countries was also high: a differential of 5 to 6 percentage points between the United States and Britain on the one hand and Germany and Japan on the other, was not unusual. During the fixed-rate dollar standard of the 1960s (which could be projected back into the 1950s), however, Graph 4 shows that long-term interest rates were somewhat closer together and less volatile — at least until the 1969-1971 period, when the pegged rate system came under pressure and finally broke down.

Using historical US data on average month-to-month and year-to-year changes, Table 2 shows a more precise comparison of interest rate volatility under the classical gold standard, the Bretton Woods dollar standard, and the present period of no-par floating exchange rates. Measured either monthy or annually, the mean percentage point change in long-term interest rates on US bonds under floating exchange rates has been about ten times as high as it was under the classical gold standard, and about four times as high as under the Bretton Woods system. (The differences in volatility were considerably less pronounced for short-term interest rates; they were lowest under Bretton Woods, considerably higher under the gold standard, and highest during the recent float.)

Although the unusually high variance in nominal (and real) exchange rates since 1973 is now well recognized, the modern period's extraordinary volatility in long-term interest rates — and its possible implications for stock prices — is sometimes forgotten. In exploring the differences in the behaviour of long-term interest rates across exchange rate regimes, let us focus on the two extremes: the classical gold standard and the current floating system. Was the

TABLE 2

US INTEREST RATE VOLATILITY

	Mean absolute % change	Standard deviation
	Annual data	
Short-term rates		
Gold standard (1879-1913)	0.90	0.91
Bretton Woods (1950-1970)	0.69	0.77
Floating system (1973-1988)	1.72	2.03
Long-term rates		
Gold standard (1879-1913)	0.12	0.11
Bretton Woods (1950-1970)	0.29	0.30
Floating system (1973-1988)	1.25	1.51
	Monthly data	
Short-term rates		
Gold standard (1879-1913)	0.40	0.57
Treasury bills		
Bretton Woods (1950-1970)	0.16	0.24
Floating rates (1973-1988)	0.47	0.77
Federal funds rate		
Bretton Woods (1960-1970)	0.18	0.26
Floating system (1973-1988)	0.53	0.95
Long-term rates		
Gold standard (1879-1913)	0.03	0.04
Bretton Woods (1950-1970)	0.07	0.11
Floating system (1973-1988)	0.27	0.37

(*) The volatility measures are based on changes, annual or monthly, in percentage points.
Source: see Appendix.

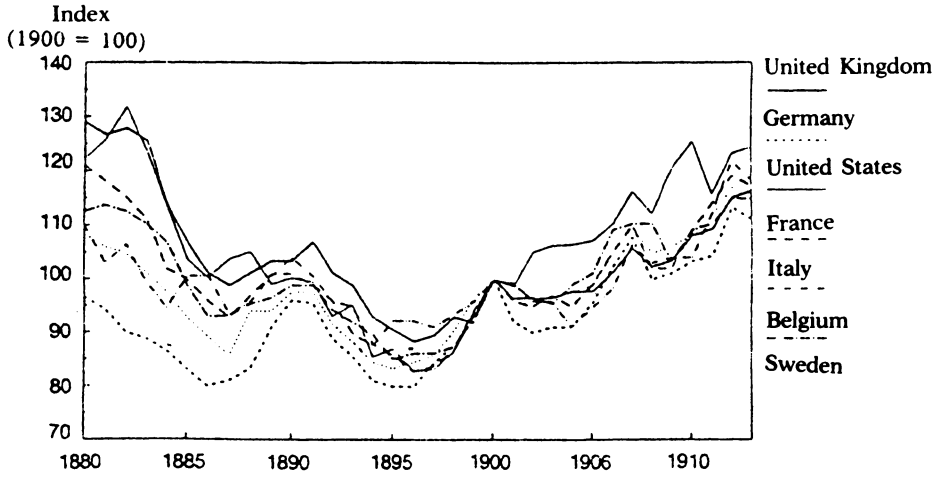
success of the late — nineteenth — century system in keeping long-term interest rates low and stable because the common price level was well anchored? In fact, the common price level, as measured by national wholesale price indices (WPIs), moved substantially during the period (Cooper [5]). Interspersed with sharp cyclical fluctuations, the drift of wholesale prices was downward by about 2% a year from the 1870s to 1896 and upward thereafter about the same amount until 1913, as shown in Graph 5. Whether or not any of these

price level movements should have been expected and thus registered in interest rates has been a matter of long-standing curiosity and is an important part of the "Gibson paradox" (Fisher [7]; Barsky [1]). But they were not so registered, as comparing Graph 5 with Graph 3 makes clear.

Perhaps the nature of the exchange rate regime, rather than its success in anchoring price levels, is more important in minimizing volatility in long-term interest rates (McKinnon [18]). Consider two facts about the classical gold standard. First, it was fully international, encompassing all the financially important countries. No alternative liquid financial asset (with significantly different monetary characteristics) existed into which international investors could conveniently and continually shift. Bonds denominated in sterling, dollars, francs, and so on bore the same risk of general price level inflation or deflation. Unless some obviously persistent price inflation seemed in the offing, arbitrage between bonds with worldwide markets and relatively illiquid nonmonetary assets, such as real estate or inventories of commodities, was simply too inconvenient to appeal to international portfolio managers.

GRAPH 5

WHOLESALE PRICES



Source: see appendix.

Second, nations had made firm, long-term commitments to return to their traditional gold parities even if gold convertibility had to be temporarily suspended because of some panic or run. Thus investors had *long-term confidence* in what, say, the dollar/sterling exchange rate could be expected to be in 20 years hence, even though they occasionally faced some *near-term uncertainty* as to whether the exchange rate would be contained within the gold points in a week or a month. Thus, the classical gold standard avoided the continual churning of asset portfolios that we now associate with free international capital mobility. Because of the absence of long-term exchange risk across otherwise economically and politically diverse countries, long-term interest rates remained low and uniform.

In contrast, under floating exchange rates with no official parity commitments, news of how the exchange rate may evolve in the future is immediately telescoped back into portfolio choices in the present; thus, both the spot exchange rate (Frenkel and Mussa [9]) and long-term interest rates (McKinnon [15]) have become more volatile. Insofar as the market judges that some currencies are likely to depreciate against others and that these weak currencies suffer from general uncertainty about what their governments' long-run monetary intentions are, the rates of interest on bonds denominated in them will be higher. So will volatility in the interest rates of all nations with open financial markets.

1.1 *The US Dollar in the Postwar Period: From Strength to Weakness*

The financial evolution of the United States vis-à-vis Japan since 1950 nicely illustrates how this weak-currency, high-interest-rate syndrome can develop. In the 1950s and 1960s, the United States was the anchor of the world dollar standard, with relatively low interest rates and a stable price level. Then dollar devaluations — actual and threatened — against important "hard-money" trading partners gradually increased the level and the volatility of US interest rates and, less obviously, of US prices.

The clamour for dollar devaluation began in the late 1960s when the traditional US trade surplus diminished; President Richard Nixon

was advised to devalue in 1971 to restore the country's international competitiveness. The push continued through the early administration of President Jimmy Carter; Secretary of the Treasury Michael Blumenthal stated that the dollar was overvalued and thus provoked another run against the dollar in 1977 and 1978. Even during the 1981-1985 period of dollar strength from its largely accidental (and unanticipated) overvaluation, private market participants *expected* — albeit incorrectly before March 1985 — that the dollar would fall in order to restore the United States' international competitiveness (Frankel and Froot [8]). In 1987, worried about the strongly growing US trade deficit, Secretary of the Treasury James Baker warned foreign central banks not to prop up the dollar and thus provoked an exchange crisis in which inflows of private foreign capital dried up (McKinnon [18]). More recently, in 1988 and so early in 1989, central banks intervened quite heavily to keep the dollar within a range of about 125 to 135 yen, and the foreign exchanges were relatively tranquil. Nevertheless, with the persistent US trade deficit in mind, influential economists such as Martin Feldstein [6] continue to advocate that the dollar should be devalued.

Parenthetically, the traditional argument that devaluation will correct a trade deficit is not generally valid (McKinnon [14]). Suppose that an economy is open so that arbitrage in goods and commodity markets with the outside world is unrestricted. Then, a policy that operates directly on the savings-investment balance — say, the fiscal deficit in the US case — is the only way that the trade deficit can be reduced. On the other hand, a devaluation can be effected only by easing monetary policy — either current or prospective — and thereby increasing inflationary expectations. Because a devaluation signals that the domestic price level will be higher in the future, it may well induce current domestic absorption to rise relative to current output, in what I call the "perverse absorption effect" (McKinnon [17]). Although domestic goods become cheaper on world markets, total domestic spending for both investment and consumption also increases. Thus, the monetary value of the trade balance is as likely to worsen as to improve from a policy of devaluation cum easy money.

Nevertheless, participants in the financial markets may themselves believe that a devaluation is likely to improve the trade balance

— the traditional elasticities model of the balance of trade (Robinson 1937 and 1950)(2). Alternatively, financiers may anticipate that government officials will be influenced by economists, the majority of whom still adhere to the elasticities model. Either way, as long as the US fiscal and trade deficits remain substantial, the threat of further dollar devaluation is aggravated.

Because of this continuing risk of further devaluation, international investors now demand much higher yields on dollar assets than on those denominated in yen or marks. The dramatic transformation of the United States from a strong-currency country in the 1960s to a weak-currency country in the 1980s is particularly apparent in Graphs 6 and 7, which plot the cost of capital to US firms against that prevailing in Japan and Germany respectively.

During the Bretton Woods period, as Graph 6 shows, the prime rate for short-term lending by Japanese banks and the (controlled) yield on long-term industrial bonds from that country were about 6 to 7% (3). While US counterpart rates stayed lower, in the range of 4 to 5%, until the commitment to fixed parities began to fray with the threatened dollar devaluation toward the end of the 1960s. When the exchange rate was fixed at 360 yen/dollar, inflation in the two countries, as measured by PPIs encompassing broad baskets of tradable goods, was virtually the same — and only about 1 percent per year (Table 3) (4). Thus, nominal interest rates were indicative of

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(2) In an insular economy with capital controls and limited arbitrage in international goods markets, exchange rate determination can be separated from present and prospective monetary policy. Keeping the domestic money supply constant, the government can undertake a controlled devaluation through sterilized intervention in the foreign exchanges. As output (and exports) are stimulated, domestic absorption will be constrained by increased interest rates — unlike the situation in a financially open economy.

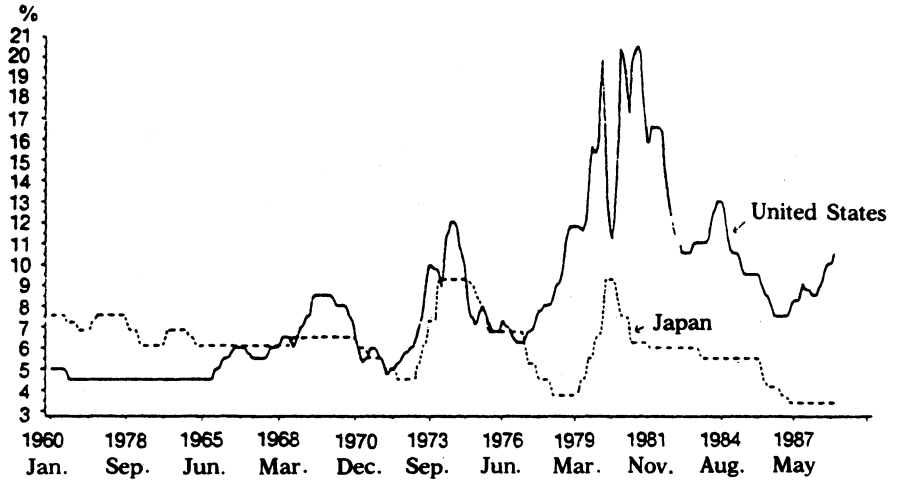
(3) There is good reason to believe that the actual cost of capital to Japanese industry was substantially higher than the prime loan rate and the rate on industrial bonds (HORIUCHI [12]). For example, a bank often required its loan customers to maintain a non-interest-bearing compensating balance with it.

(4) Other price indices that include nontradable services, such as the consumer price index (CPI) and the GNP deflator, diverged much more (MCKINNON and OHNO [19]). One can make the case, however, that inflation in a broad basket of tradable goods, and not nontradable services, is the appropriate measure of Fisher effects in interest rates. Thus, in deflating nominal interest rates to get "real" rates, using expected inflation in producer price indices is the most appropriate generally available measure.

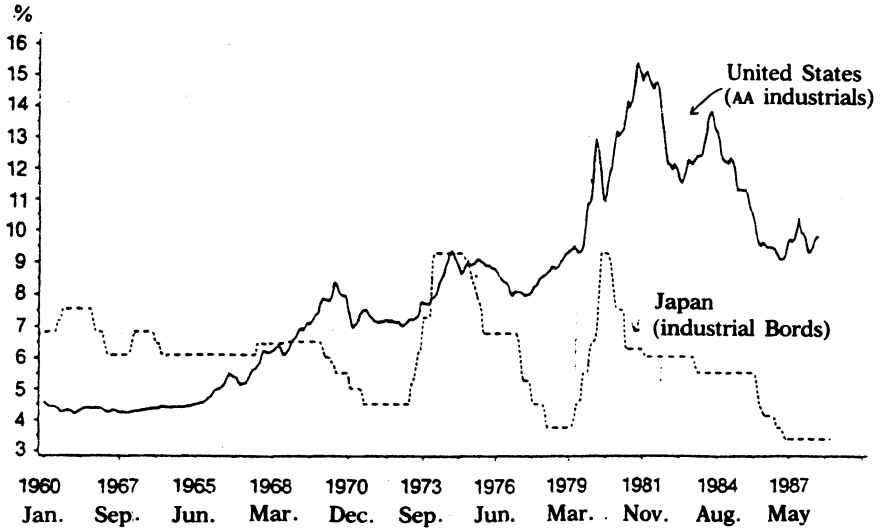
GRAPH 6

THE COST OF CAPITAL, UNITED STATES AND JAPAN

a) Prime rate (nominal)



b) Corporate Bond Rates (nominal)

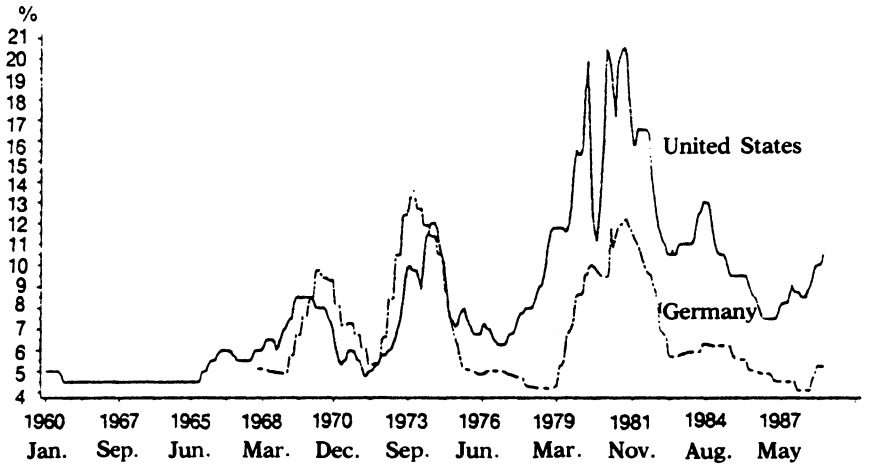


Source: see appendix.

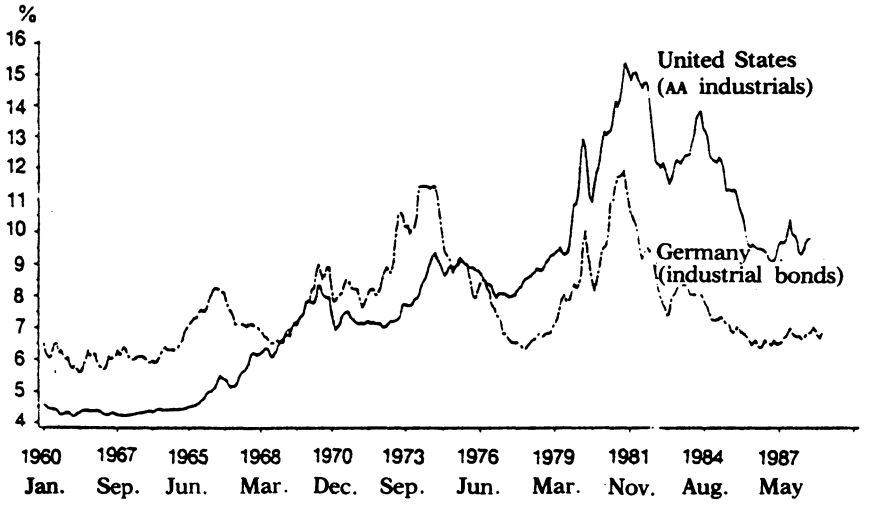
GRAPH 7

THE COST OF CAPITAL, UNITED STATES AND GERMANY

a) Prime rate (nominal)



b) Corporate bord rates (nominal)



Source: see appendix.

relative "real" interest rates across the two countries, with those in the United States being lower but not very different from those in Japan.

By the 1980s, as Graph 6 shows, US nominal interest rates had become much higher than Japanese (although the differential was variable). In early 1989, with the dollar having fallen to about 130 yen, the Japanese prime lending rate was 3.5% whereas the US rate was 11.5%; high-grade industrial bonds were at more than 10% in the United States and less than 5% in Japan. From the dollar devaluations after 1970, the United States has experienced much higher inflation in its PPI than has Japan or Germany (Tables 3 and 4). Expectations can differ substantially from experienced price inflation, however, and survey data on long-term expectations of American or Japanese price inflation — say, those associated with 20-year bonds — do not exist. Thus, any precise comparison of "real" rates of interest between the United States and its hard-currency trading partners is now much more difficult than it was two decades ago. Now that the common monetary standard has broken down into a regime of floating exchange rates, one can no longer presume that real interest rates are naturally driven toward equality, as they were under the classical gold standard and tended to be under Bretton Woods.

Nevertheless, it is clear that the increase in nominal interest rates in a weak-currency country such as the United States will shorten the term structure of business decision-making relative to that of a low-interest country such as Japan. Take the least favourable case for this argument: long-term expectations of price inflation in the US PPI

TABLE 3

PRODUCER PRICES AND EXCHANGE RATES

	Producer price index (1960 = 100)			Nominal exchange rate	
	United States	Japan	Germany	Yen/$	DM/$
1960	100	100	100	360	4.20
1970	116	114	114	360	3.60
1989,Q1	349	204	219	128	1.85

Sources: Prices: OECD: *Main Economic Indicators*, various issues. Exchange rates: IMF: *International Financial Statistics*, various issues.

TABLE 4

PRODUCER PRICES AND MONEY WAGES
(annual percent change from 4th quarter to 4th quarter)

	1960-1969	1970-1980	1981	1982	1983	1984	1985	1986	1987
					United States				
Wages	3.8	8.0	7.6	5.3	3.4	4.1	3.9	1.5	2.2
PPI	1.5	9.2	5.9	1.5	1.9	1.3	−0.3	−4.5	4.4
					Japan				
Wages	11.3	11.9	5.9	4.4	4.3	4.1	3.8	1.8	4.1
PPI	1.2	6.7	0.1	0.2	−1.2	0.3	−2.3	−5.8	0.1
					Federal Republic of Germany				
Wages	8.0	7.3	4.9	4.7	2.7	2.6	5.1	4.1	3.4
PPI	1.1	4.7	6.9	3.8	1.6	2.5	0.9	−3.7	1.0

Source: OECD: *Main Economic Indicators*, various issues.

vis-à-vis the Japanese PPI equal the observed interest rate differential between the two countries, with both movements expected to be led by continual dollar devaluations into the indefinite future. So, in a conventional sense, "real" rates of interest are equalized after all! One can show, however, that the effective duration of finance, as defined in any standard textbook (for example, Van Horne [24]), will be reduced in the United States. The higher the nominal interest rates — even if they are offset by inflationary expectations, the shorter the "real" payback time will be for any given term to maturity of corporate debt. Take a 20-year corporate bond and compare a company that pays 5% interest because inflation is expected to be zero, to one that pays 15% because inflation is expected to be 10% per year over the bond's maturity. For the second firm, most of the (inflation-adjusted) real cost of debt service will come early in the contract; the final repayment of principal will be trivially small after 20 years because the price level will then be so much higher. For the first firm, the effective duration of the 20-year debt contract will be much longer.

True, the average time to maturity of corporate debt need not

remain the same in the two cases. But insofar as heightened uncertainty about future price inflation reduces the nominal maturity structure of corporate debt — say, to less than 20 years — the effective duration of corporate debt in the high-interest, high-inflation case will be further foreshortened. This reduction in the average term to maturity of new issues of private debt is a well-known response to increased inflation.

Here is a financial explanation for what the popular press seems to see as a sociological puzzle. Why, relative to their behaviour in the 1950s and 1960s, have US corporations reduced the time they are willing to wait for a payoff from investments, whether in plant and equipment or in research and development? Why have Americans in competition with the seemingly more patient Japanese, become less willing to undertake the long-term risky investments necessary to hold markets in manufacturing or even some services? The answer: because of higher nominal interest rates and higher price inflation arising out of continual threats to devalue the dollar.

So here is a paradox. Although largely responsible for precipitating the breakdown of the worldwide monetary standard of the 1950s and 1960s, the United States (and possibly Britain) among the industrial countries may well have the most to gain by cooperating to reestablish a new one. If credibly and carefully done (as described below), a new monetary standard that linked the United States to hard-currency Europe and to Japan could enable the Federal Reserve System to reduce US interest rates to German levels and perhaps even eventually to Japanese. By leaning on the now-superior financial reputations of the Germans and Japanese (5), a new monetary pact among the United States, the nations of Western Europe, and Japan could be the most efficient way to eliminate with minimal economic stress, expectations of future dollar devaluation and higher US price inflation. Of course, the general gains from reducing exchange rate risk and interest rate volatility would accrue to all participating countries.

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(5) Lest this comment raise the nationalist hackles of Americans, remember that in the early 1950s both Germany and Japan leaned heavily on the then — superior financial reputation of the United States to stabilize their own price levels by pegging their exchange rates to the dollar.

In summary, my empirical premise is that the Western industrial economies are now sufficiently open in both trade and finance to satisfy the conditions for being a single optimum currency area. In particular, the United States, Germany (representing the Western European bloc), and Japan could and should cooperate to establish a common monetary standard that fixes *into the indefinite future* the yen/dollar and mark/dollar exchange rates within narrow bands (6). The three blocs have a strong mutual interest in coordinating their monetary policies to approximate the conditions that would prevail in a single currency area: fixed exchange rates leading to a common price level in tradable goods that provides the natural nominal anchor for the common monetary policy (McKinnon [13], chap. 10).

2. - New Rules for the Game

2.1 *Rule 1: Set Official Targets for Exchange Rates Based on Purchasing Power Parity*

Nominal values for the yen/dollar and mark/dollar exchange rates should initially be targeted so that the United States, Germany — representing the European Monetary System (EMS) (7) — and Japan can most easily converge to a common rate of price inflation in tradable goods. Then, in this new steady-state equilibrium, the band of permissible exchange rate fluctuation could be progressively narrowed.

There is a problem of transition: current exchange rates are out of alignment, and consequently, national rates of price inflation differ

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(6) In emphasizing long-term continuity in the nominal exchange rate, this proposal differs from many other schemes which are for reducing the scope for short, and intermediate-run exchange fluctuations. For example, JOHN WILLIAMSON's [25] widely discussed proposal for containing exchange rates with a fairly wide band while allowing the band iteself to glide or crawl gradually through time as economic circumstances change would not pin down *nominal* exchange rates in the distant future. Thus, Williamson's proposal would not eliminate excess volatility from long-term interest rates, nor would nominal interest rates be equalized across countries as they were by the classical gold standard.

(7) Britain should, of course, become subject to the exchange obligations of the EMS and thus also be a party to the broader agreement.

somewhat. For the first quarter of 1989, Kenichi Ohno and I have calculated that concurrent purchasing power exchange rates (using PPIs as the standard) were about 175 yen/dollar and 2.08 marks/dollar when actual rates were 128 and 1.85 respectively (Table 5). If the three countries' rates of price and wage inflation (adjusted for productivity growth) proved roughly the same in 1989, these rates could be the announced targets. From 1986 through early 1989, however, the prolonged undervaluation of the dollar — that is, the overvaluation of the yen and, to a lesser extent, the deutsche mark — has put the United States on a higher inflation path than the other two conuntries; thus US producer prices have been rising at an annual rate of 8 to 10% so far in 1989. Despite excessive inflationary pressure in the world economy overall, the overvalued yen has kept the PPI quite stable (it actually fell from 1986 through 1988) and depressed the normally higher rate of growth in Japanese money wages.

TABLE 5

ESTIMATES OF PURCHASING POWER PARITY EXCHANGE RATES
(1989, first quarter)

	Yen/$	Dm/$
Long-run averaging of producer prices *(a)*	179	2.08
Price pressure at producer level *(b)*.....	171	2.07
Best pooled estimate (equal weights)	175	2.08
Actual nominal rate	128	1.85

(a) Using Cassell's method, with 1975, first quarter, to 1989, first quarter, as "the" single base year.

(b) The price pressure method, which is conceptually different from long-run averaging, is described in OHNO [21].

Source: exchange rates: IMF: *International Financial Statistics*, various issues. producer prices and unit labor costs: OECD: *Main Economic indicators*, various issues.

The momentum in these differential wage and price movements can be altered only with a lag. Thus, to smooth convergence to a common inflation rate, exchange rate targets should be set somewhat below current PPPs say, at about 165 yen/dollar and 2.0 marks/dollar. To help nudge the dollar upward through relative monetary

adjustments, the authorities should initially announce fairly wide bands of targets — say, 155 to 175 yen/dollar and and 1.9 to 2.1 marks/dollar (Table 6). Once monetary coordination becomes well established and the large differentials in nominal interest rates are reduced, these bands could be narrowed to, say, 1 percent on either side of the central parities — similar to the band that prevailed during the Bretton Woods period (Table 1). Then, with exchange rates known to be fixed into the indefinite future, international commodity arbitrage would ensure convergence to a common price level (as measured by PPIs), and financial arbitrage would eventually align long-term interest rates.

How would nations adjust to differing rates of growth in labour productivity once exchange rates were fixed? Growth in national money wage claims would come to reflect more or less accurately any differentials in productivity growth across the three countries — as was the case under the old Bretton Woods system of pegged exchange rates. When the exchange rate was fixed at 360 yen/dollar (1950 to

TABLE 6

PPP EXCHANGE RATES FOR 1989

	Producer price index (1985 = 100)			PPP exchange rate	
	United States	Japan	Germany	Yen/$	DM/$
1989					
Q1	107.3	92.7	101.4	175	2.08
Q2				173*(a)*	2.07*(a)*
Q3				170*(a)*	2.06*(a)*
Q4				168*(a)*	2.05*(a)*
Suggested target rates for exchange rates in 1989 for smooth convergence to purchasing power parity	155-175	1.9-2.1			

(a) Projected. Using the best pooled PPP estimates for the first quarter of 1989 (See Table 5) as the Benchmark, PPP exchange rates in the rest of 1989 can be calculated as new PPI data become available, as follows:

$$\text{Yen } E_t^{PPP} = 175 \frac{PPI_t^J/92.7}{PPI^{US}/107.3}, \quad \text{Mark } E_t^{PPP} = 2.08 \frac{PPI_t^G/101.4}{PPI^{US}/107.3}.$$

Source: see Table 5.

1970), Japanese productivity growth in tradable goods was roughly three times as high as the growth in US labour productivity. Under the common monetary standard, markets responded by having Japanese money wage claims grow roughly three times as fast as their US counterparts, so inflation in each country's PPI was roughly the same (Table 3).

2.2 *Rule 2: Central Banks Should Make Monetary Adjustments Symmetrically*

To nudge exchange rates in the desired direction, a country with an undervalued currency would slow its domestic money growth — if necessary, by raising its short-term interest rates relative to those abroad — while monetary policy in the strong currency country became relatively expansionary. Thus, the aggregate money stock would remain approximately unchanged.

For example, at the present time, raising the yen/dollar and mark/dollar exchange rates toward their PPPs would require the US Federal Reserve System to follow a fairly tight money policy while the Bank of Japan and the Bundesbank are relatively more expansionary. (Given the strong overall inflationary pressure in the world economy in 1989, the adjustment should come mainly through monetary tightening in the United States). As the mark and yen are nudged down toward their PPP levels, inflationary pressure on prices and wages in the United States should slacken a bit while it picks up in Japan and Europe. The nominal anchor, the common price level measured at PPP exchange rates, would not be upset if this monetary adjustment was indeed symmetrical.

In contrast, the basic asymmetry in the old Bretton Woods system became its fatal flaw. Other countries adjusted their money growth to stabilize their dollar exchange rates, whereas the United States did not respond — a pattern that continued in the form of "dirty" floating throughout the 1970s and 1980s. Hence, in the 1970s, dollar weakness induced a net expansion in the world money supply and inflationary pressure, and the surprising strength of the dollar in the early 1980s precipitated worldwide deflation (McKinnon [15]).

The monetary control mechanism outlined above relies primarily on symmetrical adjustments in relative short-term interest rates to keep the yen/dollar and mark/dollar exchange rates within a well-defined range. This control would be greatly strengthened if the three central banks formally announced their exchange rate objectives. Then speculation by international investors would be stabilizing. Exchange rate expectations could coalesce around the official targets (say, 165 yen/dollar or 2.0 marks/dollar) with relatively little actual monetary adjustment at the national level being required. (The relatively tight monetary policy pursued by the US Federal Reserve in 1989 could have boosted the dollar more easily if such explicit exchange rate targets had been officially announced.)

2.3 *Rule 3: Official Exchange Intervention Should be Largely Unsterilized*

If the monetary pact was announced and if exchange rates moved sharply away from their official targets, the implication would be that speculators doubted that the necessary domestic monetary adjustments would be forthcoming. In such a case, direct official intervention to support the unduly weak currency would be necessary. But to be decisive and re-establish the pact's credibility, the monetary consequences of the intervention should be largely unsterilized: the weak-currency country's money supply should contract as that of the strong country expands. This policy would not preclude internal money-market smoothing operations by each central bank, as occurred under the classical gold standard (Bloomfield [2]). By keeping an open discount window at the central bank as a shock absorber, each country's high-powered money base could change proportionately less than the official intervention in the foreign exchanges.

Once the pact became operational, however, little day-to-day foreign exchange intervention should be necessary. As under the late-nineteenth-century gold standard and the calm periods of the Bretton Woods system, private exchange rate expectations would be regressive within the official bands. Hence, the huge flow of international payments could be cleared by private dealers (stabilizing speculators) without direct support from the central banks.

2.4 *Rule 4: Choose a Consistent Nominal Anchor*

When exchange rates are successfully fixed, the triumvirate must still monitor the upward or downward pressure on the common (tradable goods) price level. There is, of course, the standard problem of information lag in data collection. It is worth remarking, however, that data on commodity prices — even producer price indices — become available much more quickly than GNP statistics.

The common price level thus becomes the natural nominal anchor for the system as a whole. Because a broad index of tradable goods prices can be approximated by producer price indices, collective monetary policy would be aimed at keeping national PPIs stable. Strong empirical evidence exists that producer (or wholesale) prices do align themselves across countries that have maintained fixed nominal exchange rates for some years (McKinnon and Ohno [19]). Therefore, keeping each country's PPI stable would be consistent with the mutual fixing of nominal exchange rates and stability in the common PPP.

To implement this common PPI target, each central bank could still use some estimate of normal noninflationary expansion in domestic credit as its intermediate monetary target, which would determine aggregate money growth for the triumvirate as a whole. That growth would be collectively tailored upward or downward as information on deflationary or inflationary pressure in the common price level became available — or if the exchange reserve position of individual countries changed significantly.

Other national price indices, such as consumer price indexes (CPI's) and GNP deflators, which include nontradable services, might increase at slightly different rates without provoking any official monetary response. Indeed, if the parties to the agreement have different rates of productivity growth, cumulative divergence across countries in these other price indices is to be expected as the prices of nontradable services diverge — even through nominal exchange rates remain fixed and the common PPI for tradables prices is constant. Thus, it might be a mistake to choose the consumer price index as the nominal anchor. Similarly, if each national monetary authority aimed for constant growth in money GNP as its nominal anchor, this action would likely be inconsistent with the exchange rate agreement itself.

3. - Is a Common Currency Necessary?

Would moving to a common monetary standard mean moving to a common currency? Almost all the benefits of the scheme I have suggested can be secured with national currencies remaining in circulation. Each government could regulate its own banking system somewhat differently, as was done under the late nineteenth-century gold standard and the Bretton Woods system when exchange rates varied within a narrow band. Bank notes denominated in marks, dollars, yen, and pounds could continue to be issued at the national level; commercial banks would continue to hold required reserves with national central banks which would remain lenders of last resort. Supervising and regulating private banks would remain unambiguously the responsibility of national monetary authorities. Indeed, introducing a common currency and a supernational central bank might needlessly confuse lines of responsibility for assisting failing domestic financial institutions.

Thus, under my proposal for a common monetary standard, institutional changes in national money markets would be minimal. To be sure, the scheme would involve major *conceptual* changes for the behaviour of national central banks — particularly for the US. Federal Reserve System, which, in the postwar period, has been much less internationally oriented than its German or Japanese counterparts. Nevertheless, the process of monetary cooperation outlined above is fundamentally evolutionary and would involve no formal loss of monetary sovereignty. Each individual nation would have the option of exiting from the agreement should it prove unsatisfactory or should some domestic upheaval make it impossible to abide by the rules (8).

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(8) SAMUEL BRITTAN [3] also emphasizes that the success of EMS arises out of its evolutionary character — and that leaping to a single central bank might be counterproductive.

Data and Sources

1. - Gold Standard Period

1) Long-term interest rates: *a)* United States: unadjusted index number of yields on US railroad bonds from Macaulay (1938); *b)* United Kingdom: yield on consols taken from Capie and Weber [4]. *c)* France: annual average yield on 3 percent rentes from Homer (1977).

2) Wholesale prices series are taken from Mitchell [20].

2. - Postwar Period

1) *Long-term government bond yields*: *a)* United States: yield on 10-year government bonds from Citibase series FYGT10; *b)* Japan: yield on long term government bonds (seven years and over) from IMF: *International Financial Statistics,* line 61; *c)* Germany: yields on public authority bond (at least three years to maturity) from IMF: *International Financial Statistics,* line 61; *d)* United Kingom: yield on 20-year government bonds from IMF: *International Financial Statistics,* line 61.

2) *Prime rates*: *a)* United States: Citibase series FYPR; *b*) Japan: rate on loans secured by bills of especially high credit worthiness as agreed by the Federation of Bankers Associations from Bank of Japan, *Monthly Economic Review; c)* Germany: rate on bills of less than DM100,000 eligible for rediscount at Bundesbank from Deutsche Bundesbank: *Monthly Review.*

3) *Corporate bonds rates*: *a)* United States: AA industrial bond yield from Citibase series FYAAI; *b)* Japan: industrial bond series from Bank of Japan, *Monthly Economic Review; c)* Germany: industrial bond series from Deutsche Bundesbank, *Monthly Review.*

4) *US Volatility*: *a)* gold standard short term: the commercial paper rate in New York City on choice 60-90 day two-name paper from Macaulay (1938); *b)* post-war short rate: market yield on three-month Treasury bills or federal funds rate (where indicated); both series from the *Federal Reserve Bulletin; c)* long rates: as shown above.

BIBLIOGRAPHY

[1] BARSKY R.B.: «The Fisher Hypothesis and the Forecastability and Persistence of Inflation», *Journal of monetary Economics*, vol. 19, n. 1, January 1987, pp. 3-34.

[2] BLOOMFIELD A.: *Monetary Policy under the International Gold Standard, 1880-1914*, New York, Federal Reserve Bank of New York, 1959.

[3] BRITTAN S.: *Monetary Integration and 1992*, Munich, West Germany, 1989.

[4] CAPIE F. - WEBER A.: *A Monetary History of the United Kingdom 1820-1922*, London, Allen Unwin, 1985.

[5] COOPER R.: «The Gold Standard: Historical Facts and Future Prospects», Washington (DC), Brookings Institution, *Brookings Papers on Economic Activity*, pp. 1-45, Reprinted in COOPER R.N.: *International Monetary System: Essays in World Economics*, Cambridge (Mass.), MIT Press, 1987.

[6] FELDSTEIN M.: «The Case Against Trying to Stabilize the Dollar», *American Economic Review*, vol. 79, n. 2, May 1989, pp. 36-40.

[7] FISHER I.: *The Theory of Interest*, New York, Macmillan, 1930.

[8] FRANKEL J. - FROOT K.: «Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations», *American Economic Review*, March 1987, pp. 93-106.

[9] FRENKEL J. - MUSSA M.: «The Efficiency of Foreign Exchange Markets and Measures of Turbulence», *American Economic Review*, May 1980, pp. 374-81.

[10] GIOVANNINI A.: «How Do Fixed Exchange Rate Systems Work: The Evidence from the Gold Standard, Bretton Woods, and the EMS», New York, Center for Economic Policy Research, *Discussion Paper*, n. 282, 1988.

[11] HOMER SIDNEY: *A History of Interest Rates*, 2nd ed., New Brunswick (N.J.) Rutgers University Press, 1977.

[12] HORIUCHI A.: «The Low Interest Rate Policy and Economic Growth in Postwar Japan», *The Developing Economies*, vol. 24, n. 4, December 1984.

[13] MCKINNON R.: *Money in International Exchange: The Convertible Currency System*, New York, Oxford University Press, 1979.

[14] ——: «The Exchange Rate and Macroeconomic Policy: Changing Postwar Perceptions», *Journal of Economic Literature*, vol. 19, June 1981, pp. 531-57.

[15] ——: *An International Standard for Monetary Stabilization*, Washington (DC), Institute for International Economics, 1984.

[16] MCKINNON: «The Exchange Rate and the Trade Balance: Insular Versus Open Economies», Presented to the Conference on *Evolution of the International and Regional Monetary Systems*, Brussels, December 1988.

[17] ——: «Monetary and Exchange Rate Policies for International Financial Stability: A Proposal», *Journal of Economic Perspectives*, Winter 1988.

[18] ——: *Alternative International Monetary System*», Economic's Department, Stanford University, Photocopy, 1989.

[19] MCKINNON R. - OHNO K.: *Purchasing Power Parity as a Monetary Standard*», Economic's Department, Stanford University Photocopy, 1989.

[20] MITCHELL BRIAN R.: *European Historical Statistics 1750-1970*, London: MacMillan, 1975.

[21] OHNO K. MORGESTERN: *The Purchasing Power Parity Criterion for Stabilizing Exchange Rates*» IMF Washington (DC), 1989.

[22] ROBINSON J.: «The Foreign Exchange», in ELLIS H. - METZLER L.A. (eds.): *Readings in the Theory of International Trade*, Philadelphia, Homewood, 1950, pp. 83-103.

[23] UNITED STATES, DEPARTMENT OF COMMERCE - BUREAU OF THE CENSUS: *Historial Statistics of the United States*, Washington (DC), Bureau of the Census, 1975.

[24] VAN HORNE J.C.: *Financial Market Rates and Flows*, 2nd ed. Englewood Cliffs (N.J.), Prentice Hall, 1984.

[25] WILLIAMSON J.: *The Exchange Rate System*, Rev. ed., Washington (DC), Institute for International Economics, 1985.

[26] ——: «The Case for Roughly Stabilizing the Real Value of the Dollar», *American Economic Review*, vol. 79, May 1989, pp. 41-5.

What Future for the International Monetary System?

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The time has come to begin contemplating a common currency for the industrialized democracies. This idea is much too radical to garner much political support in the near future, but it does offer a way to overcome a number of difficulties that these economies now face, and that are likely to become more, not less, serious in the coming years. So despite the novelty of the proposal, a common currency provides a focal point for analysis, one that may in turn suggest intermediate steps to accomplish some of the same results with less political commitment.

Before I turn to the present and the future, it is worth considering past international monetary arrangements. The first section of this paper, therefore, reviews briefly six types of international monetary arrangements that have existed during the past century. I then turn to an evaluation of the strengths and weaknesses of the current arrangement of floating exchange rates subject to ad hoc management. (Throughout, the focus is on the arrangements among the major economies of the day, which basically means Europe and North America and, for the last 30 years, Japan) (1).

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(1) During the earlier period, the monetary arrangements discussed here also encompassed many peripheral areas, by virtue of their colonial status. How peripheral countries relate to the international monetary core is an interesting and important topic, but it is necessary first to be clear about relationships at the core, and I do not have space to go further here.

Next I briefly describe a variety of proposals for reform, ending with my own. The final section answers some of the arguments against a common currency for the major industrialized democracies and points out its advantages.

Advise: the numbers in square brackets refer to the Bibliography in appendix.

Next, I briefly describe a variety of proposals for reform, ending with my own. The final section answers some of the arguments against a common currency for the major industrialized democracies and points out its advantages.

1. - Past International Monetary Systems

History is complex, and a detailed exposition of the workings of various international monetary systems would take this paper far afield. Yet it is worthwhile to sketch how different systems have addressed the two fundamental questions, both in theory and how the theory was modified in practice. The two fundamental questions concern how the international monetary system envisions: 1) countries' adjustment to disturbances to international economic relations (the adjustment problem), and 2) provision of adequate, internationally acceptable means of payment (the liquidity problem).

The history of the past century, excluding the two world wars and their immediate aftermath, can be divided roughly into six periods, each of which involved a somewhat different international monetary system covering the major countries; the gold specie standard (1879 to 1913); the gold exchange standard (1925 to 1931); freely floating exchange rates (1919 to 1925 and 1933 to 1936); the early phase of the Bretton Woods system (1947 to 1959); the late phase of the Bretton Woods system (1959 to 1973); and managed flexible exchange rates (1973 to the present).

Of course, this division inevitably involves some stylization, since history evolves continuously. All countries have not always moved together, and in some cases the shift from one system to another was gradual and involved antecedents.

1.1 *The Gold Specie Standard*

Under the gold specie standard, national money and the acceptable means of payment were the same namely, gold coins of standard weight and fineness. (Foreign coins might be reminted into different

national coins, or they might simply circulate domestically.) Thus, both domestic and international liquidity were, in principle, satisfied, by new gold production. If it proved inadequate — as it did for prolonged periods, most notably from the 1870s to the mid-1890s — it was augmented domestically by the rapid expansion of new forms of payment, notably bank notes and demand deposits in banks (Triffin [21]). Increased international liquidity was also partially offset by a prolonged decline in the price level, which raised the real value (in commodities) of a given volume of gold money. Wholesale prices fell by 40 to 55% in all the major countries between 1873 and 1896 (Cooper [3]).

The simple theory of the adjustment mechanism under the gold standard was clearly and concisely stated by David Hume in 1752 (Cooper [2]). A transfer (for example, reparations or a capital investment) from country *A* to country *B* raised the money stock in *B* and lowered it in *A*. As a result, prices would fall in *A* and in *B*, and in consequence, *B* would enlarge its trade surplus (or reduce its deficit), make the real transfer in goods, and earn the gold back until monetary and payments equilibrium was restored.

How the adjustment mechanism worked in practice is still somewhat controversial for several reasons. First, much less gold actually moved internationally than the theory suggests (Bloomfield [1]). Second, Viner's [22] classic study of large capital inflows into Canada before World War I revealed that although he could discern price movements, especially those of nontradable goods against tradable goods, they were far smaller and worked to accomplish changes in trade flows more rapidly than he and his teacher, Taussig, expected. Later analysis suggested that a substantial part of the adjustment was accomplished by changes in spending — up in the receiving country, down in the sending country — associated with the transfer itself. Recently, McKinnon [15] has argued that there can be no presumption about which way a sending country's terms of trade will change, and with a fully integrated capital market there need not be any change in domestic (nontradable) prices. The key point is that adjustment is accomplished partly through changes in spending (absorption) and partly through changes in prices, especially the prices of nontradables.

1.2 *The Gold Exchange Standard*

The adjustment mechanism under a gold exchange standard is similar to that under a gold standard. The theory is that downward pressure on prices in the sending country is mediated by the banking system, which operates on fractional gold reserves. In fact, the period of the gold exchange standard was dominated by economic stagnation in the leading country, Britain, but that problem was related to the exchange rate at which Britain returned to gold convertability, rather than the nature of the standard itself. The six-year period was too short to discover if the adjustment would really have worked.

The novelty of the gold exchange standard was that it conserved gold by removing it from circulation and concentrating it in the hands of the leading banks and by encouraging banks, including smaller central banks, to hold short-term claims on other countries (mostly in sterling, secondarily in dollars). Thus, national currencies began to play a role as international means of payment. Moreover, this period also saw extensive use of loans from one central bank to another as a temporary source of liquidity. The period was too short to reveal the potential difficulty of relying on growth of the ratio of gold-convertible currency holdings relative to a more slowly growing stock of monetary gold, a problem underlined later by Triffin [21].

1.3 *Floating Exchange Rates*

The floating exchange rates used twice during the interwar period were not thought of as a system at all but rather as an unavoidable but temporary expedient during turbulent times until a more stable system could be reestablished. The adjustment process worked by having market price — the exchange rate — clear the market for foreign exchange, much as the price of strawberries clears the market for strawberries. If the home demand for a foreign currency rose for any reason, the exchange rate of that currency would appreciate to ration the demand to what was available at the new price. The most comprehensive examination of floating exchange rates during this period (Nurkse [17]) found them a major source of disturbance, rather than a source of smooth adjustment (a view that strongly

influenced the reestablishment of fixed exchange rates under the Bretton Woods system).

No international liquidity, in the sense of an internationally accepted means of payment, was necessary under these arrangements. Presidents of one country would buy the foreign currencies they needed in the foreign exchange markets, and the banks did not need to hold international reserves. Since the arrangement was considered temporary, however, central banks had their eye on the longer term and continued to hold gold. In 1919 to 1920 and again in 1929 to 1933, there were sharp drops in wholesale prices, so the real value of monetary gold rose. In addition, both Britain and the United States devalued their currencies against gold (that is, they redefined the gold content of a pound and a dollar respectively) in the 1930s, moves that increased the monetary value of gold reserves.

1.4 *Bretton Woods, Early Phase*

The Bretton Woods system was the first international monetary system to be designed from scratch. It stipulated fixed exchange rates, but, recognizing that, in view of national commitments to full employment, "fundamental disequilibria" might arise from time to time, it called for discrete changes in exchange rates as necessary, with international approval. The designers took for granted that monetary and fiscal policies would be used to achieve domestic equilibrium, as defined by each country. International disequilibria were to be financed in the short run, drawing if necessary from the new International Monetary Fund.

Major adjustments in exchange rates were made in 1949, but thereafter exchange rate changes for major currencies were rare. Rather, adjustment was achieved by differential liberalization of trade and payments. Many countries were in a suppressed disequilibrium following Would War II and maintained tight restrictions over trade and payments. These restrictions were gradually relaxed, country by country, as conditions permitted. Not until the end of 1958, however, did western European countries abandon controls on current account transactions, and many maintained restrictions on outward capital movements long after that.

Curiously, the Bretton Woods system made no provision for a secular rise in international liquidity. Since the United States held a disproportionate share of the world's monetary gold reserves (more than 70%) in the late 1940s, the gold reserves of other countries could be built up in part by drawing on those of the United States, as well as from new production. In addition, however, countries accrued substantial balances of US dollars, as they had under the gold exchange standard. It should be noted that the world economy grew much more quickly in the 1950s than anyone dared to expect in the mid-1940s. The rapid growth in production and trade seemed to call forth a corresponding growth in demand for international reserves, which was satisfied in large part by US Treasury bills, thought to be better than gold since they bore interest yet were convertible into gold by the United States on demand. These circumstances gave rise to the celebrated Triffin [21] dilemma: How could the world economy grow without additional dollars and yet how could the gold convertability of the dollar remain credible as US liabilities to foreign monetary authorities grew continually relative to the US gold stock?

1.5 *Bretton Woods, Late Phase*

In its later years, the Bretton Woods system kept its original conceptual underpinnings, but there was diminished scope for differential payments liberalization as the mechanism of adjustment. The 1960s saw some modest exchange rate adjustments made for major currencies (the deutschmark in 1961, the pound in 1967, the French franc in 1969), but for the most part countries were spared the need to adjust by a large and growing US payments deficit, financed by a buildup in central banks', holding of dollars. When this buildup became unacceptably large, the Bretton Woods system broke down. The basic cause of its failure was that discrete changes in exchange rates, the key feature of its adjustment mechanism, were incompatible with the high mobility of private capital that had again become the norm by the late 1960s. Any anticipated change in official exchange rates evoked a huge movement of speculative capital, which played havoc with domestic monetary policy. The emergence of any funda-

mental disequilibrium, especially in the world's largest economy, was bound to be highly destabilizing under these circumstances.

In the late phase of the Bretton Woods system, the question of international liquidity, omitted earlier, was addressed systematically. The result was the creation of a new kind of international fiat money, the special drawing right (SDR), to be held and used by central banks. The SDR was designated to become the centerpiece of the international monetary system, to be created as needed to serve the world's need for international liquidity. In fact, total SDR creation has amounted so far to only about US $25 billion, less than 10% of official foreign exchange reserves.

1.6 *Managed Floating Exchange Rates*

Since 1973, the major currencies have been floating with respect to one another, but that float has been subject to market intervention, sometimes heavy intervention, by monetary authorities, seeking to influence the movement of exchange rates. And since March 1979, most European currencies have been linked through the European Monetary System (EMS), a system like that of Bretton Woods combined with permissible variation in market exchange rates around the central rates, and occasional (11 in all) changes in central rates.

Under floating exchange rate arrangements, it is supposed that the main mechanism of adjustment are changes in real exchange rates brought about by market-induced changes in nominal rates, supported as appropriate by changes in fiscal policy designed to maintain overall balance in the economy. (Within the EMS, of course, adjustment is similar to what it was supposed to be under the Bretton Woods system). In fact, it is difficult to see that sort of behavior in what has happened during the floating-rate period — manifestly, exchange rates have not always moved so as to reduce current account imbalances. But interpretation of the historical record is complicated by two factors. First, macroeconomic policies, especially fiscal actions, have not always been conducive to international balance. On the contrary, in the early 1980s the United States pursued a markedly expansionist fiscal policy combined with a tight monetary policy, while Japan, Germany, and Britain introduced strong fiscal

contraction. The combination produced heavy upward pressure on the US dollar, which, in turn, led to a sharp deterioration of the US current account and corresponding increases in the surpluses of Japan, Germany, and, for a time, Britain (which was also influenced by increasing production of North Sea oil). In this instance, exchange rate movements "disequilibriated" the current account. Yet in doing so, perhaps they were serving the broader role of equilibriating economies.

That brings us to the second problem of interpretation: in an integrated world economy, there is no special merit in assuring balance in each country's current-account position. On the contrary, at particular times, for a variety of reasons some countries will be net savers, while others will be net investors, and one of the useful functions of an integrated economy is to channel savings to investment.

If the integrated economy crosses national boundaries, savings can also be expected to cross national boundaries, sometimes for substantial periods of time. As a consequence, we do not have a clear, operational definition of international equilibrium. At a minimum, "sustainable" capital movements should be set against the current account. Unfortunately, the actual purchases of foreign assets do not carry labels that tell us whether they are sustainable or not. Drawing the line at "long-term" investments will not do either, since the definition of "short-term" ("with original maturities under one year") is itself arbitrary; moreover, in an integrated market, many financial instruments, whatever their original maturity, may be purchased for short-term or speculative motives, while some short-term credits (for example, trade credits) can be expected to grow predictably in total over time. Another dividing line that is often suggested is one between official monetary transactions and all others. This suggestion introduces the other characteristic of a monetary system, international liquidity. Under a system of freely floating exchange rates, there should be no need for international liquidity, in the sense of an officially held, international means of payments. But, in fact, we do not have true freely floating rates, and the growth of official foreign exchange reserves during the period of managed floating rates has been phenomenal (Table 1), despite the widespread view that liquidity was excessive at the end of 1972.

TABLE 1

INTERNATIONAL RESERVES AND COMPARATIVE DATA
(year-end figures US $ billion equivalent)

Holdings	1945	1960	1970	1980	1985
Gold *(a)*	33.3	38.0	37.2	41.8	40.1
US gold holdings	20.1	17.8	11.1	11.2	11.1
Foreign exchange *(b)*	14.3	18.6	44.6	370.8	378.7
US liabilities	4.2	11.1	23.8	157.1	172.8
Other *(c)*	–	3.6	10.8	36.5	62.5
Total reserves	47.6	60.2	92.5	449.1	477.7
World exports	34.2	113.4	280.3	1844.6	1783.0

(a) At official prices of $35/oz. before 1980 and $42/oz. in 1980 and 1985.
(b) Reported assets differ from US reported liabilities by minor differences in concept, by measurement error, by official holdings of foreign exchange other than dollars, and by official deposits in the Eurocurrency market.
(c) SDRs and reserve positions in the IMF.
Sources: FEDERAL RESERVE BULLETIN; INTERNATIONAL FINANCIAL STATISTICS.

The growth in international liquidity has been satisfied overwhelmingly by the acquisition of foreign exchange reserves. Since 1973, there has been only one allocation of SDRs (in three branches), amounting to less than US $15 billion. The dollar has continued to be the preferred currency, but the official holdings of deutsche marks and yen have grown even more rapidly (starting from a much lower base). In addition, the members of the European Monetary Compensation Fund have opened unlimited lines of short-term credit for one another. Many monetary authorities continue to hold gold, the traditional reserve asset, but it is virtually never used. (Indeed, there is no generally accepted method of valuation, since the official price for an ounce) remains at US $42, while the market price has ranged from US $200 to US $800 and has been approximately US $400 for several years.)

Much of the explosive growth in reserve holdings has been voluntary and desired, lending support to Harrod's long-standing contention that the demand for reserves would be higher under floating exchange rates, not lower as economic theorists generally contended. The voluntary acquisition of reserves makes it inappropri-

ate to consider a balance on current account plus net private capital movements a suitable measure of payments equilibrium. Of course, some of the reserve acquisition, particularly the large official acquisition of US dollars in 1987, took place not to satisfy a growing demand for reserves but to brake the depreciation of the dollar against other leading currencies, particularly the yen and deutsche mark. In other words, increases in official foreign exchange holdings can reflect a mixture of motives, being partly a consequence of defensive exchange-rate actions under a managed floating rate system.

1.7 *A Brief Evaluation*

What do we want of an international monetary system? I suggest that: *a)* it should contribute to our basic economic objectives of growth with low inflation; *b)* to that end and as an end in itself, it should help to reduce the uncertainties economic agents face as close as possible to the minimum intrinsic in nature and in the economic system; *c)* it should permit diversity in the national pursuit of economic and social objectives, with a view to maintaining harmonious relations among nations; and *d)* it should do all this as unobtrusively as possible.

TABLE 2

VARIANCE OF QUARTERLY FORECAST ERRORS FOR THE UNITED STATES (Times 1,000) (*)

	Nominal GNP	Price level	Real GNP
Gold standard			
1890 (Q1) - 1914 (Q4)	2.98	0.25	2.83
1915 (Q1) - 1931 (Q3)	1.80	0.60	1.41
No clear standard			
1931 (Q4) - 1941 (Q4)	5.64	0.24	4.02
1942 (1) - 1951 (Q1)	0.67	0.60	0.78
Bretton Woods, 1951 (Q2) - 1971 (Q3).....	0.13	0.02	0.11
Fluctuating rates, 1971 (Q4) - 1980 (Q4)	0.13	0.02	0.14

(*) Note: Quarterly forecasts made using a Kalman filter with respect to expected level and expected rate of change on past data for each series.

Source: MELTZER ([16], p. 141).

In terms of such aggregate indicators as real economic growth, variability of inflation, and predictability of growth and inflation, the Bretton Woods system, while it lasted, performed better than did the systems of previous periods or the current managed float (Table 2). In terms of long-term price stability, the gold standard performed best; the reasons remain poorly understood since both short- and medium-term price variability under this system was substantial.

1.8 *Managed Flexible Exchange Rates: An Evaluation*

1.8.1 The Case for Flexible Exchange Rates

Two quite different traditions argue in favor of flexible exchange rates. The monetarist tradition (for example, Friedman [6]) emphasized that such rates insulate a national economy from external monetary disturbances, in particularly from inflationary impulses that may be coming from abroad. The monetarists point out that under fixed exchange rates or market intervention, monetary expansion abroad will lead to reserve outflows for the expanding country but also to reserve inflows and hence monetary expansion for the country that is not expanding. If the latter's economy is operating at full capacity, the expansion will lead to domestic inflation. This imported inflation can be avoided by eschewing exchange-market intervention and allowing the currency to appreciate. In the smooth and frictionless world of economic models, flexible exchange rates provide perfect insulation against monetary impulses, positive or negative, coming from the rest of the world.

A Keynesian tradition also supports flexible exchange rates — or more accurately, changes in exchange rates. It operates on the assumption that the economic system will be hit by exogenous disturbances from time to time; for any single country, these disturbances may include the policies of other countries, to which it will then need to adjust. Under a competitive market system with continuous market clearing, adjustment is spread throughout the system via price signals, and the loss of output will be minimal and short lived. But with rigidities in the formation of prices and wages, such as exist in all modern economies, some of the need for adjustment will be thrown

on to output and employment, thus producing economic waste. The possibility of changing exchange rates introduces an element of price flexibility into a system replete with price rigidities. Under some circumstances, movements in exchange rates can substitute for product-or labor-market price flexibility, achieve adjustments in real wages and prices, and thereby avoid some loss in output. On this view of the world, the possibility of exchange rate movements introduces an additional element of flexibility into the economy.

It is noteworthy that although the monetarist and the Keynesian schools emphasize different aspects of exchange rate flexibility, and the monetarists underline the need for full flexibility, rather than merely for changes in the exchange rate, the two schools are quite compatible at this level of generalization.

1.8.2 Problems with Flexile Rates

In spite of these arguments for exchange rate flexibility, the present arrangement of floating exchange rates subject to occasional official management has a number of worrisome features:

1) as Tobin [20] has pointed out, major adjustments to external disturbances may require changes in the overall price level between one country and another. To the extent that governments treat their price levels as policy targets, adjustment via this mechanism is thwarted. If price level targeting is wholly successful and if relative prices are sticky (which is the starting point of the Keynesian rationale for floating rates), national action will offset the effect of exchange rate movements. Thus, for example, if the US dollar depreciates in response to some external disturbance, leading to price increases in the United States, the US Federal Reserve Board may tighten the country's money supply in order to avoid "inflation." The Bundesbank, in contrast, may ease monetary action in order to avoid "deflation." In this way, adjustment is shifted to output after all;

2) the imperfect competition that leads to sticky prices may have a further implication as Krugman (1989), elaborating an analysis by Dixit, recently pointed out. Fixed market-entry costs will not only slow the process of adjustment to changes in the exchange rate but will actually create a band of variation in which, for the relevant

industries, no adjustment will take place at all. The profit incentive must exceed a certain threshhold before entry is worthwhile. Once entry has taken place and the costs of entry have been sunk, the profit disincentive must move correspondingly far to make exit the proper strategy. This difference between marginal cost on entry and on exit will be reinforced by uncertainty about future exchange rates. If the costs of reentry after exit are high and if there is a sufficient probability that the conditions for reentry — for example, a sufficiently large movement in the exchange rate — will occur in the future, it may make sense for a firm to hold onto its market even at prices below its current marginal costs.

The implication of this argument here is that exchange rates may have to swing far in order to achieve real adjustment since industries subject to significant entry and exit costs will be unresponsive to relatively minor movements. In this respect, flexible exchange rates are not an especially efficient mechanism of adjustment since, by a long-term measure of comparative advantage, they may induce misallocations of resources that persist for a long period of time. Consider the mid-1980s, when many foreign firms, attracted by the profit possibilities created by an exceptionally strong dollar, entered the US market profitably and then hung on tenaciously even after the dollar depreciated substantially — in some cases beyond the point at which profitability continued;

3) a high variability of real exchange rates may reduce total investment in the sectors of the economy open to international competition. When a currency has depreciated strongly, profits in tradables will be high and the cash flow will be good, but firm will be reluctant to invest in productive capacity because they do not expect the cheap currency to last. They will simply enjoy their windfall profits (and perhaps invest more in market opening, as discussed above). Yet when a currency is strongly appreciated, even if management expects the situation to be temporary, low profits and cash flow may lead to low investment because of credit rationing and because of skeptical, risk-averse boards of directors. Although many factors have undoubtedly played a role, it is perhaps no coincidence that since the inauguration of floating exchange rates in 1973, investment in plant and equipment, compared with that of the 1950s and 1960s, has been

depressed throughout the area of the Organisation for Economic Co-operation and Development. In particular, Europe failed to invest much in the 1983-1985 period, when profits were high and rising as a result of a strong dollar;

4) since firms cannot use financial markets to hedge their investment in future production (as distinguished from a particular sale), they will do so by investing abroad, across currency zones, even if doing so means giving up some of the advantages of cost and scale associated with exporting from their home base or some other lower cost location. Since some of this diversification takes place through takeovers and buyouts, a possible consequence is greater world concentration in certain industries, leading to a reduction of world-wide competition;

5) at the national level, business will seek to blunt what they consider unequal competition by urging an increase in trade barriers. Business firms generally feel they can cope with the market uncertainty that attends any growing, dynamic economy so long as their competitors are subject to the same ups and downs. What they find intolerable is being placed at a competitive disadvantage with respect to their leading competitors for reasons that are unrelated to decision-making in the firms or indeed in the industry. Present exchange rate arrangements mean that a firm can suddenly find itself facing much stiffer competition (2) as a result of an exchange rate movement that has its origins in the arcane world of finance. Certainly, American firms and organized labor greatly increased their pressure on the US government for some form of relief against "overcompetitive" imports during the 1983-1985 period of an exceptionally strong dollar (3).

All these factors involve a misallocation of resources arising from the uncertainties associated with exchange rate flexibility. Whether monetary arrangements can be improved is a complex question that depends in part on whether exchange rate uncertainty is simply the surface manifestation of uncertainties intrinsic to the economic sys-

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(2) Or much less, but that is rarely a matter of concern.

(3) It is noteworthy that under the gold standard, although national price levels moved substantially, they tended to move in parallel, rather than relative to one another.

tem as a whole or whether exchange rate dynamics actually add to the uncertainties faced by those who have to make decisions about production and investment — that is, about the present and future output of the economy. It also depends on whether we can find a superior set of arrangements, one that reduces whatever incremental uncertainties market-determined exchange rates contribute to the economic system, while at the same time preserving or providing an adequate substitute for the contribution that exchange rate changes may make to reducing the cost of adjustment to the changes that dynamic economies inevitably have to make from time to time.

Whether high volatility in floating exchange rates reflects or adds to uncertainties in the economic system and instabilities in economic policies is an unresolved controversy. It is difficult to sustain the view, however, that foreign exchange markets accurately and faithfully reflect only disturbances exogenous to the economic system plus the net impact of governmental actions (which, of course, by themselves either dampen volatility or augment it). Graph 1 shows the monthly changes in the dollar/deutsch mark exchange rate, from 1960 to 1988. The increase on the inauguration of floating rates in 1973 is dramatic.

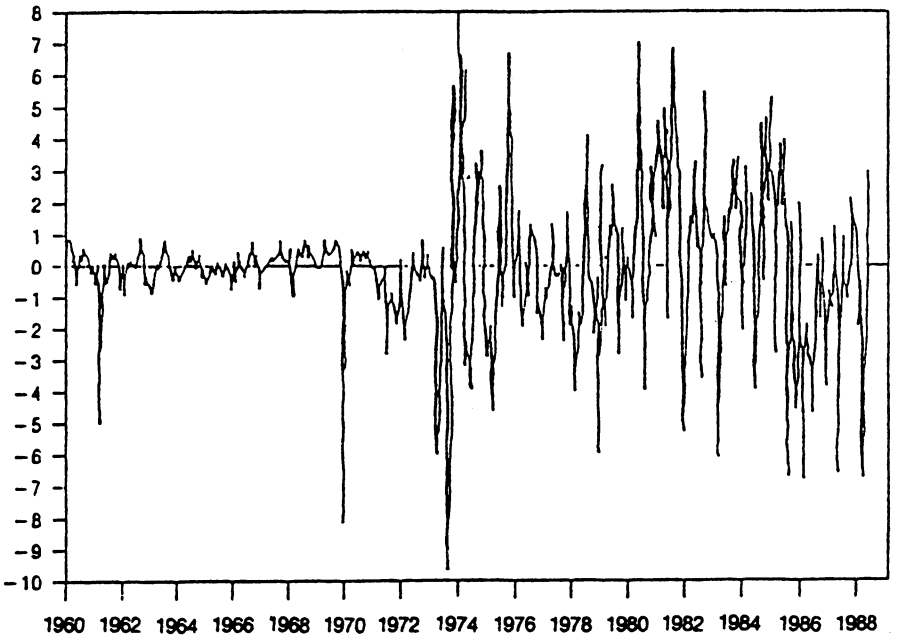
A growing body of evidence supports a view that practitioners have long held: namely, that financial markets have a dynamic of their own and are occasionally subject to bandwagon effects or speculative bubbles, rational or irrational. Shiller [18] has shown that US stock prices have frequently followed paths that are very difficult to explain in terms of any economic fundamentals (4).

More recently, Krugman ([18]; 1989) has shown that the appreciation of the US dollar in 1983 through 1985 cannot have been based on fundamentals alone (although some appreciation could have been expected on the basis of the configuration of monetary and fiscal policies in the United States on the one hand and in Japan, Germany, and Britain on the other). Krugman's analysis started with the

(4) Indeed, chartism, one of the principal base for stock selection by some specialists, presupposes that stock prices follow distinctive patterns that are basically unrelated to what is happening in the economy. To the extent that substantial numbers of investors adopt this basis of stock selection, chartism can become self-fulfilling provided its prices stay within the wide bounds set by the liquidation value of the firms and the competition for funds provided by long-term yield on bonds.

GRAPH 1

US GERMAN REAL EXCHANGE RATE CHANGES (*)



(*) Percentage per month changes corrected for differential movements in wholesale prices.
Source: DORNBUSCH (1988).

observation that the market must have expected a subsequent depreciation of the dollar at a rate no greater than the interest differential between comparable assets denominated in dollars, yen, and deutsch mark. Using generous assumptions about the impact of such expected depreciation on trade flows, Krugman showed that US external debt would have grown explosively — that is, unsustainably. This analysis suggests that market participants were not paying adequate attention to the underlying fundamentals but rather were following their own lead in a bubble until it burst in early 1985, with help from heavy purchases of deutsch marks by the Bundesbank.

Moreover, Frankel and Froot [5] have shown, on the basis of survey data, that short-run exchange rate expectations are extrapolative — that is, they project recent rate movements forward, even when the movement is away from the long-run (six- to twelve-month) view of what the exchange rate will be. Thus, exchange rate movements are subject to bandwagon effects in the short run. Over a longer period, exchange rate expectations seem to regress to recent past levels, according to the survey data. But, of course, market movements are a series of short runs. So there is good circumstantial evidence for believing that the foreign exchange market's own dynamic can introduce disturbances into the real side of the economy. At least on some occasions, it adds to the uncertainties that those making decisions about production and investment must face.

Can anything be done about the exchange rate situation? Are there arrangements that would be superior to the unstructured managed floating in the sense of reducing uncertainty without incurring costs in some other dimension — especially in the costs of adjustment to the disturbances that occur inevitably from time to time?

2. - Proposals for Reforms

A number of suggestions have been put forward. Tobin [19] has suggested a modest tax on foreign exchange transaction to discourage short-term transactions of low social utility; one presumption is that doing so would reduce exchange rate volatility. Williamson and Miller [23], Kenen [8], McKinnon [12], [13], [14], and Cooper [4] have proposed different techniques and emphases for introducing greater stability into exchange rate movements directly.

2.1 *A Transactions Tax*

Tobin's proposal [19] is for a small tax, of, say, 25 basic points (0.25%), to be imposed on all transactions that involve converting one currency into another, including forward transactions. (Some go further and suggest a small tax on all financial transactions, but that is

not discussed here.) Such a tax would raise the cost of all cross-currency transactions, but the rise would be so small that it could be expected to have virtually no effect on trade in goods and services and on long-term capital flows. It would, however, impose a relatively large cost on short-term, in-and-out transactions. For instance, 50 basic points for a two-way transaction would require an interest differential or more than 25% per annum to cover it for a weekly turnaround, and more than 100% per annum for a daily turnaround. Such a tax would greatly reduce the current huge volume of foreign exchange transactions ($700 billion a day in New York alone), most of which are interbank transactions. The aim of the tax would be to reduce short-term exchange rate volatility and to encourage greater emphasis on longer-term transactions, which are presumably more valuable socially.

In fact, however, the impact of such a tax on short-term volatility is entirely unclear. To the extent that banks, corporate treasurers, and other short-term traders are market-makers, like securities specialists, their activities should be stabilizing and reduce short-run volatility. In that event, taxing them out of short-term transactions would lead to an increase in volatility. But to the extent that these traders seek quick short-term gains, must guess very short-run market developments, and are, therefore, subject to bandwagon effects, their activities may increase short-run volatility, and a transaction tax would reduce it.

In either case, a transactions tax would not prevent the emergence of major misalignments, such as occurred in the mid-1980s, except insofar as they arise from the cumulative effects of a series of short-run extrapolative expectations that might not get started in the presence of a tax. Presumably, one characteristic of a cumulative exchange rate movement in the "wrong" direction is that each participant feels that it could change at any time, even in the very near future, but that he can reverse his position at the right moment, before the crowd turns, or at least in its forefront. To that extent, a transactions tax could inhibit major speculative currency movements, but it is not clear that it would be enough to prevent them.

To be effective, the transactions tax would have to be introduced in all leading financial centers; otherwise, transactions would simply move to the tax-free centers, something that is increasingly possible

with modern communications. Universal agreement on the tax would not, however, be necessary. It would suffice to stipulate that disputes arising over foreign exchange transactions could not be adjudicated in countries of the leading financial centers unless the tax had been paid. Since it takes years to establish a reputation for fair and impartial dispute settlement, a small tax would be unlikely to drive transactions to tax-free countries without such reputations.

A tax represents one proposal for reducing exchange rate volatility. Neither outcome nor the avoidance of significant misalignment is certain, however. Other proposals focus on commitments to affect exchange rate movements directly.

2.2 *Target Zones: The Williamson-Miller Proposal*

Williamson and Miller [23] have proposed that the major countries establish target zones for their exchange rates, using for each country a calculation of a "fundamental equilibrium exchange rate" that, would in turn, be based on agreed-on account targets. These equilibrium rates would be recalculated at regular intervals so they could move — presumably slowly — in response to new information. These equilibrium rates would, in turn, be translated into a set of mutually consistent nominal exchange rates, which would represent the center of the target zone. At first, the zone around these central rates would be rather wide — say, ± 10% — to encompass substantial initial deviation from the targeted current account positions. The zones could gradually be narrowed, once the current account targets were achieved.

Monetary authorities would intervene in exchange markets — and, more important, adjust their monetary policies — as exchange rates reached the edges of the target zone. These edges could be either hard — well-defined rates, that were not to be supassed — or soft — presumptive points of intervention and leaning by authorities who had made no firm commitment that the boundaries would never be crossed.

With n countries and only n-1 exchange rates among them, such a system would offer a degree of freedom for monetary policy, which could them be directed toward aggregate demand within the com-

munity as a whole. To put the point another way: if a given exchange rate approached the edge of the zone, whether one country tightened its monetary policy to affect the rate or the other country loosened its policy would depend on the overall state of aggregate demand. Each country, in addition to having a current account target, would also have a nominal demand growth target, chosen so as to be mutually consistent with those of other countries, and national fiscal policy would be directed toward achieving these aggregate demand targets.

The effect of this system would be to limit the movement of exchange rates and thus to prevent the emergence of major misalignments of the type that occurred in the 1980s. It would not, however, eliminate short-run volatility of exchange rates, and the uncertainties that they create, unless the target zones were quite narrow (which is not envisaged). Although it would be possible for business people to hedge against unexpected exchange rate movements for particular transactions, it would not be possible to hedge for an investiment or a commitment to a marketing strategy that would take a number of years to mature. So this source of uncertainty would remain.

The Williamson-Miller proposal is ambitious in its demands for policy coordination among major countries and for the skillful manipulation of monetary and fiscal instruments by national authorities. It is especially ambitious with respect to the coordination of policy targets — equilibrium exchange rates and growth in national nominal aggregate demand. Agreement on the key underpinnings for the calculation of real effective equilibrium exchange rate — current account targets plus the bearing of exchange rates on their achievement — would be particularly demanding, not least because the setting of current account targets would be an intrinsically arbitrary exercise in a world of high capital mobility and relatively open markets for goods and services. Consider the case of Canada. As a high income country, it should perhaps run a current account surplus, contributing to the transfer of real resources to the developing countries. But in every respect except income level, Canada itself is a developing country, and indeed it has run current account deficits throughout most of its existence as an independent state. How should we determine what Canada's current account position should be in the future or, for that matter, the current account position of the

United States, which is also a developing country by comparison with Europe and Japan, given its relatively rapid population growth, increasingly through immigration as in the nineteenth century?

2.3 *The Kenen Proposal*

Kenen [8] advocated something like an extension of the EMS to include the United States, Japan, and possibly other countries. He supports hard exchange-rate margins with a band width of at least 10% — considerably larger than the EMS band — so that changes in central rates, which must occasionally be made, need not affect market rates and hence would not provide a one-way speculative option. In an analogy with the EMS, Kenen would also increase the visible reserves available for intervention by creating a modified substitution account into which the United States would deposit gold and others would deposit dollars.

Kenen takes the view that the choice of central rates is less relevant than the procedures for changing them. If they are not right — that is, if an adjustment is needed — they should be altered. He would give weight, but not mechanical weight, to a host of indicators, especially changes in relative price competitiveness, as does the EMS, but in the end, changes would be discretionary and negotiated among all the relevant parties.

2.4 *Key Currency Monetary Coordination*

McKinnon [12], [13] and [14] concentrates attention on the currencies of just three countries, the United States, Japan, and West Germany, although he assumes several other currencies would be linked to the deutsche mark through the EMS. He would at first confine the movement of exchange rates among these currencies within a 10% band, like Kenen proposes, but over time he would gradually reduce the width of the band so that their exchange rates would eventually show little (no?) movement.

In addition, McKinnon departs from the other proposals by designating purchasing power parity (PPP) as the guide for selecting the central rates to which the exchange rates are to converge.

Specificly, he would construct broad-based indices of comparable tradable goods and choose exchange rates that equate the value of a comparable basket of these goods (McKinnon and Ohno [15]). Nominal exchange rates would then remain fixed except insofar as changes were required to offset relative changes in PPP as defined by the baskets. Monetary policy in each of the countries would be dedicated to maintaining the fixed exchange rates; monetary policy in the three countries taken together would be geared to maintaining stability in the prices of the baskets of tradable goods, as Keynes [9] advocated more than half a century ago. Such a target would imply moderate inflation as measured by the consumer price index. Clearly, such a system would require that the three countries coordinate their monetary policies closely.

2.5 *A Common Currency*

I would go a step further than McKinnon and institutionalize close monetary cooperation in coherent management of a single currency for the industrialized democracies (Cooper [4]). So long as national currencies are distinct and under separate management, the possibility of major changes in nominal and real exchange rates exists, and that possibility will itself be a source of uncertainty to investors so long as memories of the 1970s and 1980s persist. The most effective way to eradicate exchange rate uncertainty is to eradicate exchange rates — that is, to introduce a single currency. A single currency would, of course, require a single monetary authority, a bold, even radical step that governments and their publics are not yet ready to contemplate seriously, much less undertake. So, unlike the proposals discussed above, which have been put forward with the near future in mind, this suggestion has to be envisioned in a longer time frame — say into the next century. Still, it carries the logic of a return to fixed exchange rates to its full conclusion, and for that reason alone it is worth exploring more fully.

The institutional aspects of a common currency are not so difficult to imagine. They could be constructed by adaptation of the US Federal Reserve System, which is an amalgam of twelve separate reserve banks, each of which issues its own currency. One could

imagine a committee for all the industrial democracies (or any subset of them) that would decide the basic thrust of monetary policy for the group as a whole. Call it the Board of Bank Governors. On it could sit representatives of all member countries, with votes proportional to GNP. At one extreme, the representatives would be ministers of finance; at the other, they would be outstanding citizens chosen by their governments for long terms solely for the purpose of managing the monetary system. An obvious interim (and possibly permanent) step would be to appoint the senior governors of existing central banks.

National central banks could continue as the national components and agents of the new international board and indeed could remain the issuers of currency (as the 12 District Federal Reserve banks do in the United States). National currency designations — pounds, marks, yen, francs, dollars — could even be retained for nationally issued currency if popular sentiment so demanded. The point is that monetary policy would be out of the hands of any single government. Governments could not finance their budget deficits through monetary expansion, and the various national currencies would exchange at fixed rates. Commercial transactions and bank transactions, many of which do not now involve currency at all, would take place in a common unit of account. A common currency would, of course, eliminate uncertainty for financial transactions, so a unified capital market would develop throughout the area covered by the currency. By the same token, however, changes in nominal exchange rates could no longer be used as part of the adjustment process. (I will say more about this point below.)

For the participating countries, international and national currency would become identical, and liquidity needs would be satisfied by the Board of Bank Governors' decisions to increase the money supply.

A common currency could create major adjustment problems if the exchange rates among the precedent currencies were not right at the time of conversion. Thus, a move could not be consummated until major disequilibria had been eliminated. Purchasing power parity conditions, such as those suggested by McKinnon, would have to be met at least approximately; in addition, uncovered interest parity over

all maturities should obtain, at least approximately, implying no expectation of future changes in exchange rates.

3. - Evaluation of the Single-Currency Proposal

One objection that will be raised immediately against creating a single money for the industrialized democracies is that it would involve ceding too much sovereignty to an international entity (in my scenario, the Board of Bank Governors). This objection is misguided. Ultimate sovereignty would continue to reside with the national governments. Agreeing on a common endeavor with other sovereign nations is an exercise of sovereignty, not an abrogation of sovereignty. The key question that should be asked is whether, on balance, the particular exercise of sovereignty leaves the participants better or worse off. Implementing my proposal would limit individual governments' freedom of action in the monetary arena. But the economies of these nations are becoming increasingly interdependent, a fact that increasingly limits the efficacy of individual actions in the areas of macroeconomic policy, taxation, and regulation. So retaining full freedom of action might turn out to be largely empty unless a nation was prepared to withdraw into autarky, which would be extremely costly. A cooperative endeavor, while reducing national freedom of action, would restore effectiveness to joint action.

What of the adjustment process? The principal argument for exchange rate flexibility is that it may reduce the costs of adjusting to various economic disturbances. It should be kept in mind, however, that the requirements for efficient adjustment depend on the nature of the disturbance, and the nature of the disturbance, in turn, depends in part on the nature of the monetary system. Disturbances wholly or largely monetary in nature would be greatly diminished or eliminated altogether if nations shared a common currency with no chance of changes in exchange rates (short of major political disturbance). Disturbances caused for instance, by shifts in asset preferences among national financial claim motivated by expected changes in exchange rates or by differential inflation among nations in tradable goods would largely disappear. Differences in national wage settlements not

based on changes in productivity could not be ruled out under a common currency, but their likelihood would be reduced in the presence of a common currency and extensive trade between nations. So at least some disturbances for which changes in exchange rate may be helpful would hardly exist under a common currency.

What about disturbances to the real side of the economy, such as the discovery or exhaustion of natural resources or technological changes that have different effects on different sectors or divergent rates of growth between demand and supply among nations?

With respect to technological change and the discovery or exhaustion of resources, I can make three observations concerning economic adjustment in the industrialized democracies. First, most of the adjustment would have to take place within three regions: the United States, Japan, and the European Community. Sectors are often concentrated geographically, but these three economies, taken as a whole, are so large and diversified that little adjustment is likely to be required among them. Second, major *global* disturbances, such as the oil price increase of the 1970s, are likely to affect all three regions in roughly the same way (although not, of course, identically). Third, such differential effects as remain once the first two points are taken into account are likely to be manageable within the parameters established by the natural growth and retirement of the labor force and the capital stock. Changes in real income as well as in domestic relative prices (for example, between tradables and nontradables) would help to bring about adjustment without substantial changes in output (5).

With respect to differential growth in national (or regional) demand and output, such discrepancies, whether merely cyclical in nature or reflecting more durable changes in saving behaviour, could easily be accommodated by capital movements motivated by relatively small differences in yield within an integrated capital market, such as

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(5) In this regard, KRUGMAN (1989) exaggerates the changes in output — or under flexible rates, in the real exchange rate — required to achieve a given adjustment between two large, diversified economies. MCKINNON [14], based on JONES [7], argues persuasively that the changes in the terms of trade need not be large (and may not be necessary at all) to accomodate a disturbance between two multisectored economies that are reasonably flexible.

would obtain over a common currency area under modern conditions.

Possibly the greatest source of disturbance between large and diversified economies would arise from significant and opposite changes in fiscal policy. If one country pursued fiscal expansion while another was contracting substantially, significant adjustment problems could arise, and changes in exchange rates might assist the adjustment. Two things must be said about this possibility. First, it is desirable to be able to use fiscal action, within limits, to affect aggregate demand at the national or regional level; the adoption of a common currency, far from preventing this approach would enhance the desirability of fiscal flexibility. Thus, it might be undesirable to allow exchange rates to adjust in response to discrepant fiscal actions, since such adjustment would both affect the structure of output (say between tradables and nontradables) and weaken the demand effects of fiscal actions (say, by leading to a large fall in net exports attendent on a fiscal expansion).

Second, however, fiscal deficits would have to be financed exclusively in the integrated capital market. So long as a government's credit was good, it would have no trouble borrowing. As the ratio of public debt to tax revenues grew, however, the market would require higher yields to be willing to take that government's securities. Thus, market signals would indicate when one government was markedly out of line with the others in terms of growing indebtedness. Fiscal freedom of action would be unimpaired, but, it would be limited by the ability to service public debt. All participants could usefully discuss the framing of fiscal policy, but formal coordination of fiscal action would not be necessary.

The above points can be summed up briefly by saying that in the not very distant future, nominal exchange rate flexibility among major currencies may create more disturbances for the real productive side of the economy than it corrects. For this reason, the creation of a common currency for the industrialized democracies is a proposal worth further considerations and analysis.

BIBLIOGRAPHY

[1] BLOOMFIELD ARTUR I.: *Monetary Policy under the International Gold Standard, 1880-1914*, New York, Federal Reserve Bank of New York, 1959.

[2] COOPER R.N. (ed.): *International Finance: Selected Readings*, Harmondsworth, Penguin Books, 1969.

[3] ——: «The Gold Standard: Historical Facts and Future Prospects», *Brookings Papers on Economic Activity*, n. 1, 1982, pp. 1-43, Reprinted in COOPER R.N.: *The International Monetary System: Essays in World Economics*, Cambridge, (Mass.), MIT Press, 1987.

[4] ——: «A Monetary System for the Future», *Foreign Affairs*, autumn 1984, Reprinted in COOPER R.N.: *The International Monetary System: Essays in World Economics*, Cambridge (Mass.), Mit Press, 1987.

[5] FRANKEL J.A. - FROOT K.A.: «Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations», *American Economic Review*, n. 77, March 1987, pp. 133-53.

[6] FRIEDMAN M.: «The Case for Flexible Exchange Rates», *Essays in Positive Economics*, Chicago, University of Chicago Press, 1953.

[7] JONES R.W.: «Presumption and the Transfer Problem», *Journal of International Economics*, n. 5, August 1975, pp. 273-74.

[8] KENEN P.B.: *Managing Exchange Rates*, London, Routledge, 1988.

[9] KEYNES J.M.: *A Treatise on Money*, vol. 2, London, MacMillan, 1930.

[10] KRUGMAN P.: *Exchange - Rate Instability*, Cambridge, (Mass.), MIT Press, 1984.

[11] ——: «Is the Strong Dollar Sustainable», *The US Dollar: Prospects and Policy Options*, Kansas City, (Mo.), Federal Reserve Bank of Kansas City, 1985.

[12] MCKINNON R.I.: *An International Standard for Monetary Stabilization*, Washington (DC), International Institute of Economics, 1984.

[13] ——: «An International Gold Standard Without Gold», *The Cato Journal*, n. 8, Fall 1988, pp. 351-73.

[14] ——: «Monetary and Exchange Rate Policies for International Financial Stability: A Proposal», *Journal of Economic Perspectives*, n. 2, Winter 1988, pp. 83-103.

[15] MCKINNON R.I. - OHNO K.: «Purchasing Power Parity as a Monetary Standard», San Francisco, Federal Reserve Bank of San Francisco, Photocopy, 1988.

[16] MELTZER A.H.: «Some Evidence on Comparative Uncertainty Experienced under Different Monetary Regimes», in CAMPELL C. - DOUGAN W. (eds.): *Alternative Monetary Regimes*, Baltimore, John Hopkins University Press, 1986.

[17] NURKSE R.: *International Currency Experience: Lessons of the Inter-war Period*, League of Nations, 1944.

[18] SHILLER R.J.: «Stock Prices and Social Dynamics», *Brookings Papers on Economic Activity*, n. 2, 1984, pp. 457-98.

[19] TOBIN J.: «A Proposal for International Monetary Reform», *Essays in Economics*, Cambridge (Mass.), MIT Press, 1982.

[20] ——: «Are There Reliable Adjustment Mechanisms?», *Toward a World of Economic Stability: Optimal Monetary Framework and Policy*, Tokyo, University of Tokyo Press, 1988.

[21] TRIFFIN R.: *Gold and the Dollar Crisis*, New Haven (Conn.), Yale University Press, 1960.

[22] VINER J.: *Canada's Balance of International Indebtedness*, Cambridge (Mass.), Harvard University Press, 1924.

[23] WILLIAMSON J. - MILLER M.H.:. *Targets and Indicators; A Blueprint for the International Coodination of Economic Policy*, Washington (DC), Institute for International Economics, 1987.

The Global Adjustment System

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1. - The Gold Standard and its Aftermath

The international monetary system that came into prominence in the four decades before World War I was a system for regulating money supplies and stabilizing, within small margins, exchange rates. It was called the gold standard because already in 1880, but especially by 1900, the currencies of the major world powers were convertible into gold. But the international monetary system was by no means monolithic. Besides the gold bloc, there were countries on the silver standard and a few countries with inconvertible paper currencies. The gold bloc itself embraced many different monetary forms; each national monetary system was unique. Many countries were in the gold currency area but did not have a gold currency; their currencies were merely convertible into gold currencies, as in the gold exchange standard (1). It is nevertheless true that the gold standard, especially

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(1) France was not on a complete gold standard before 1914: following the closing of its mints to silver in 1873, silver coins remained legal tender without being redeemable in gold, and could thus be used freely for the discharge of debts and contracts; Bank of France notes were also legal tender, but convertible into gold. Germany went onto the gold standard de facto in 1873, but kept silver thalers as legal tender in circulation. Italy was much further from the gold standard, having experienced difficulties with its banking system (which had the right of note issue) and convertibility crises in which it had to suspend specie payments. The United States went onto the gold standard in 1879 *de facto*, Austria-Hungary in 1892 and Japan in 1897. Germany and the United States adopted gold *de jure* in 1900, the former by eliminating the overvalued (but legal tender) thalers in circulation, the latter by the *Gold Standard Act* of that year. Russia went onto the gold standard in the 1890's but kept overvalued silver and paper notes in circulation, while it built up its gold reserve.

India made the sovereign legal tender (15 rupees = 1 pound) in 1899. From 1900

between 1900 and 1913, did give the world a kind of monetary unity, covering over two thirds of the world's monetary transactions. The gold bloc was a currency area of fixed exchange rates, that could be called, after Gustav Cassel, a world-wide sterling area, because of the global importance of sterling as a unit of account, the transactions domain of the British Empire and London as the centre of the international capital market (2).

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to 1912, 15 million ounces of gold (in sovereigns) were imported, and the money supply was divided between (silver) rupees, (gold) sovereigns and (paper) notes. The Royal Commission on Indian Finance and Currency, on which a young Keynes had a seat and played an influential role, recommended the accumulation of a gold reserve and an expansion of the note issue, rather than the establishment of a gold currency; the seigniorage from the coining of rupees was allocated to the creation of the gold reserve. With wartime inflation the price of silver had caught up and surpassed the silver coined into a rupee, and the rupee was threatened with melting or export. When a second commission was appointed after the war, Keynes recommended appreciation of the rupee, from its historic value of 1*s* 4*d* to 2*s*, in order to spare India the increase in rest-of-the-world inflation; he believed the consumers would gain more than the producers would lose. Keynes argued that the rupee should be fixed in terms of gold, not sterling, but the fixing should be done in London rather than New York. At this time he obviously expected stabilization of sterling: «If sterling settles down, as we hope it will, to a stable gold basis again, ...» See ELIZABETH Johnson (ed.): *The Collected Writings of John Maynard Keynes Volume XV Activities 1906-1914 India and Cambridge*, JOHNSON (ed.): Cambridge, MacMillan, 1971, pp. 281, etc.

(2) Four conditions are met by a country on the international gold exchange standard: 1) legal tender must be defined and convertible into gold or a gold-convertible currency; 2) gold must be allowed to circulate internally and to be exported and imported freely; 3) central bank note issues must be backed by gold or gold-convertible currencies; and 4) the money supply must rise or fall with surpluses and deficits in the balance of payments. The last condition is required for the adjustment mechanism to operate effectively. However, with the speeding up of the adjustment mechanism due to the growth of fractional reserve banking, central banks often acted to cushion at least part of the effects of gold flows on the banking system in order to slow the adjustment process.

Under a pure gold standard different currencies would be just different names for a particular weight of gold; exchange rates between currencies were proportionate to their metallic content and the supply of money was the monetary value of the stock of metal in circulation. The gold standard that operated before World War I was far from a pure gold standard. Other forms of money circulated as media of exchange and even as legal tender: central bank notes, commercial bank notes, bank deposits, subsidiary overvalued coinage. By the turn of the century, bank money was vastly more important as a medium of exchange than gold coins. Paper notes issued by the central bank were legal tender, sometimes redeemable in gold. Bank deposits were not legal tender but the commitment to convertibility into bank notes or gold made them close substitutes for gold coin as long as banks were solvent. The monetary system represented by the gold bloc in the pre-war period was really a gold exchange standard even though that name came into general use only in the 1920s to describe the practice, recommended by the Gold Delegation of the League of Nations at the Genoa Conference in 1922, of major countries holding foreign exchange in lieu of gold in order to economize on it.

The nineteenth century political world was organized around empires, centered on the European cpitals and the US; Europe was, as Max Weber said, "the mistress of the world". The monetary systems reflected that fact. The imperial centers had gold currencies, the colonies had banknotes of the mother country, currency board systems or, in the case of India, silver; the flow of seigniorage was in the direction of the mother country. In the "periphery" outside the empires (e.g., China, Latin America and Ethiopia) the currencies were mainly silver or inconvertible paper. Political equilibrium within Europe in the nineteenth century had been maintained through adherence to the principles of the balance of power, which would prevent any single power from dominating the Continent; but the creation of the German Empire in 1871 upset that balance. The Triple Alliance and the Triple Entente stared at each other in animosity or fear but it was nevertheless widely believed that the financial interdependence of economies bound together by the gold standard would make war impossible.

There was no lack of controversy in the 19th century over the monetary standard. From 1873 to the end of the century a great monetary battle was waged between bimetallists, gold monometallists and silver monometallists. The problem had existed earlier in the century, but it reached its acute stage as the result of the great increase in silver production in the 1870s. France, the most important power on bimetallism, had suspended specie payments in 1870. The deflationary (creditor) interests advocated the gold standard, the opposing forces advocated bimetallism; and inflationary interests (and silver producers) wanted a silver standard. The issue crystallized near the end of the century when, after more than two decades of deflation, William Jennings Bryan in the heat of the 1898 electoral campaign could charge that the American farmer had been "crucified on a cross of gold." But even at the time Bryan spoke events were overtaking the silver and bimetallic advocates as the mounting supplies of gold from South Africa removed the hitherto deflationary bias of the old gold standard. Echoes of the debate would resurface in the deflationary 1930s but the comeback of silver would be quickly aborted.

1.1 *The Long Run Stability of Gold*

The case for gold rested on the alleged long run stability, on what Roy Jastrom calls "The Golden Constant." The Kondratief index of the gold price level registers 142 in the year 1780, 141 in the year 1794, 139 in the year 1824, 137 in the year 1838, 143 in the year 1857, 139 in 1874, and 143 in 1915. Alternatively, it was 100 in 1908, 104 in 1884, 101 in 1849 and 125 in 1789. From the standpoint of long run price stability gold-based money was perhaps the most stable monetary system of all time.

Long run stability does not imply the absence of alternating inflationary and deflationary trends. There were pronounced inflationary and deflationary movements measured on a gold basis (3). They were so regular as to appear systematic (4). The long run stability of gold was based on the equilibrating mechanism, operating

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(3) Attempts to discredit the gold standard, as it operated in the 19th century, have led authors to compare the peaks and troughs of price levels in terms of a particular currency regardless of whether it was on or was not on the gold standard. Thus by noting the price level in Britain in 1797 on a gold basis, and in 1816 on an inconvertible pound basis, it is easy to show the British inflation of the Napoleonic War; and to compare the same 1816 index with the price level in 1849 when Britain was on the gold standard exaggerates the deflationary trend of gold during that period; then taking the US price level on a gold basis in 1850 and on a greenback basis at its peak during the Civil War, one shows terrible inflation; and then, comparing the same greenback price level to the trough of gold prices in 1896, one shows enormous deflation; then, from that base calculating the increase in the British price level in the 1920s one can maximize the inflationary movement. To take an extreme case it would be rather absurd to blame the gold standard for the rise in the Germany price level from 1914 to 1923. It rose a trillion fold during that period but only 1.3-trillionths of that inflation was due to the instability of gold.

This exercise is both irrelevant and unnecessary to an evaluation of the performance of the old gold standard: irrelevant because it is the fluctuations in the purchasing power of gold, not paper currencies, that must be considered; and unnecessary because there are sufficient fluctuations in the purchasing power of gold itself to make a case against the gold standard without engaging in unscientific distortions.

(4) The Russian economist Nikolai Kondratieff, between 1922 and 1928, published several papers on the question of the long economic cycles. His most important paper "Long Economic Cycles," was published in the journal *Voprosi Konyunktury*, vol. 1, n. 1, 1925). In 1928 that paper was published by the Economics Institute in Moscow in a book along with several critiques of his theory by other Soviet economists. The work was translated into German, and then an English translation, abridged from the German, was made by Wolfgand F. Stolper, and published in the *Review of Economic Studies*. A new translation by Guy Daniels, with an introduction by Julian M. Snyder, was published in 1984. See NIKOLAI KONDRATIEF: *The Long Wave* (Richardson and Snyder, 1984). I have used the index presented by Kondratief for the price series based on gold.

over the long run, by which systematic price trends bring about their correction and reversal.

Monetary expansion under the gold standard depended on gold production, which was in turn a function of gold-mining discoveries and techniques. The world price level in terms of units of gold depended on the world demand for and supply of gold. If production of gold were in excess of demand, its value would fall, which meant a rising price level; and if it were short of demand, gold would appreciate, which meant a falling price level. Price-level changes, however, brought corrective forces into play, both on the side of supply and on the side of demand. When gold depreciates (meaning inflation) profits in gold-mining fall, production declines and exploration is diminished; these factors on the side of supply reduce the inflation. But the effect on the side of demand is more important in the short run; the fall in the value of gold relative to other things increases the use of gold in industry and the arts. The opposite changes take effect when gold appreciates and there is deflation.

In the intervals spanning the peaks and troughs of the price level in the gold standard era, there were long swings of inflation and deflation. For more than a century before World War I the real value of gold fluctuated every generation. These fluctuations corresponded to the long wave cycles explored by Kondratief. One interesting question is why the trends were reversed. Deflations were followed by inflations and then reversed, suggesting a stabilizing mechanism based on gold production and consumption cycles.

The long run stability of gold was a great benefit from the standpoint of the long term capital market. But against this long run stability must be set the inconvenience and perhaps injustice of the troublesome swings. These movements created disturbing shifts in the distribution of income between creditors and debtors that led to resentment by the losers and political controversy over the nature of the standard itself.

In this paper our major concern is the adjustment mechanism under the gold standard and the controversies the creation of theories of it provoked. Before developing that theme we shall look at the long swings in price levels under the gold standard and the monetary systems that succeeded it in order to provide the backdrop in the real world against which economic controversies were measured.

Joseph Harris, writing in 1757-1758, was one of the first authors to use the term gold standard and silver standard in the modern sense of the term standard; Harris thought that Britain was on the silver standard and should stay on it: Prior to Harris "standard" referred to the degree of purity of gold or silver. But in the middle of the eighteenth century the British monetary system was in a state of transition. The overvaluation of gold in 1717, due to Newton's recommendation when he was Master of the Mint, combined with some cheapening of gold due to new production from Brazil, brought Gresham's Law into play. Contracts were increasingly paid in gold and that metal was increasingly brought to the mint for coinage. Britain was faced with a real "choice between standards" and thus the term came into use with a different meaning (5). Harris (6) wrote

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(5) Already in 1717 Sir Isaac Newton had argued, when it became necessary to alter the ratio of silver to gold, that the silver coins should not be altered (devalued) because silver was the "standard;" Richard Cantillon agreed with Newton. But this use of the term was apparently not available in the 17th century; John Locke had to find a circumlocution to express his idea that silver should be the standard: «.....the fittest metal to be *the money of account and contract and the measure of commerce* in any country is silver» (my italics) in "Further Considerations of the Lowering of Interest and raising the Value of Money" (1691) in *Several Papers Relating to Money, Interest and Trade*, New York, Augustus M. Kelley, 1968.

Britain's choice between a gold and silver standard in the 18th century was not, of course, the first such choice. In the early stages of monetary development every government had to make a conscious choice among alternative standards. Once bronze, silver, copper, tin, iron or gold had become installed as favorite materials for the coinage, habit, convention and convenience created a history of a standard in each country that no sovereign could ignore in his choice. In the 17th century, in the wake of the great production of silver in Spanish America, all countries adhered to a silver standard. Britain stumbled onto an overvalued gold price by mistake and thus was the first major country to be in a position to consider gold as a standard.

(6) Before the 18th century "standard" referred to a specific quality of the precious metals; thus standard gold meant gold 11/12 or 0.9166 fine, or 22 carats. The metrical standard for silver was 0.900 and the silver standard was 0.925 fine.

Harris used the term gold standard and silver standard in the modern use in his *Essays on Money and Coins* published in two parts in 1757-8. Harris had been appointed assay master of the mint in 1748; he anticipated Adam Smith on the benefits of free trade and had a good understanding of the monetary approach to the balance of payments. Harris believed that: «Gold and silver, for many reasons, are the fittest metals hitherto known for hoarding: they are durable, convertible without damage into any form; of great value in proportion to their bulk; and being the money of the world, they are the readiest exchange for all things, and what most readily and surely command all kinds of services. As gold is a treasure, because it decays not in keeping..... no other metals are a treasure, because they either decay in keeping, or are in too great plenty».

See JACOB VINER: *Studies in the Theory of International Trade*, London, 1937, pp. 28-9.

before the partial demonetization of silver in 1774, in which the legal tender property of silver was curtailed, foreshadowing Britain's decision to move to gold in 1816.

1.2 *The Inflationary Long Swing: 1789-1819*

The appreciation of gold (about 2% a year on the average) in the decade prior to the French Revolution was reversed in 1789 (7). Gold appreciation turned to gold depreciation when other countries were caught up in the inflationary financing of the Napoleonic wars, as specie left France for other countries. This had the effect of reducing the effective demand for specie and causing it to depreciate. This meant inflation of those currencies on a metallic standard and, according to at least two authors (8), was a great help to the US in the first two terms of the new republic. Kondratief's index, which had stood at 142 in 1780 and had dropped to 125 in 1789, rose to 205 in 1799, an inflation rate of 65% in the decade. The international breakdown of monetary standards after the French Revolution made gold unstable, as it would in future wars.

In 1797 the pound sterling became inconvertible and the pound depreciated against both gold and foreign exchange, giving rise to the British bullionist controversy which produced so many innovations in monetary theory (9). The bullionists, who advocated a restoration of

(7) A important cause of the deflation prior to 1789 was the adoption of the silver standard by India in 1766, which caused a drain of silver from several major countries, and in Britain increased the relative undervaluation of silver that led to the deterioration of her silver coinage and its partial demonetization in 1774. The general deflation to which it contributed may have given India a more significant role in the American Revolution than the Boston Tea Party suggests; it may have indirectly contributed to the misery that led to the French revolution.

(8) See JULIAN SNYDER (*loc. cit.*, p. 14) quotes George F. Warren and Frank A. Pearson, who developed a theory of monetary cycles in their book *Gold and Prices* (1935) to the effect that: «From 1789 prices in the United States rose 70% on a metal base. The resulting prosperity had much to do with the success of the Washington administration and the firm establishment of the Union».

(9) The English bullionists in their analysis of flexible exchange rates were anticipated four decades earlier by Pehr Niclas Christianen in Sweden. In the 18th century Sweden was engulfed in a substantial paper-money inflation, that had the happy side effect of stimulating, in 1761, the economist Christianen to develop the theory of money and inflation under conditions of flexible exchange rates. For a discussion of Christianen's work see HUMPHREY-KELEHER (*op cit.* pp. 286-5), and ROBERT V. EAGLY: *The Swedish Bullionist Controversy*, Philadelphia, American Philosophical Society, 1971.

the gold standard as soon as circumstances permitted, argued that the inflation in England was due to excessive issues of bank notes by the Bank of England; and that the depreciation of bank notes against both gold and foreign exchange was sufficient evidence of the overissue (10). Although it was recognized that speculation and changes in velocity could contribute to the inflation, the main issue was whether or not gold had itself depreciated.

The bullionists would have been correct had gold been completely stable. However, there is evidence that gold had itself depreciated so prices would have risen even if Britain had stayed on gold. The Bank of England was to blame for that part of the inflation due to the depreciation of the pound against gold, but the rest of the inflation was due to the instability of gold itself.

From 1803 to 1810 gold was stable (against commodities). It appreciated in the next two years but fell again in 1914, only to rise after the Battle of Waterloo. In 1816 Britain demonetized silver and decided to adopt the gold standard at the pre-war parity, put into effect in 1819.

1.3 *The Deflationary Swing: 1820-1849*

Britain was alone among major countries in adopting the monometallic gold standard in the first half of the 19th century. Most countries were on a pure silver standard; the word *argent* had for a long time signified money on the Continent and in Latin America. But exchange rates between gold and silver standard countries were stabilized by the operation of bimetallism. For bimetallism to operate effectively at least one large country must fix mint prices of both gold and silver; the more countries that are committed to bimetallism the more stable it is likely to be. The pivot role in bimetallism in the first half of the 19th century was played by France, supported by the increasingly important United States. In 1803, loaded with the plunder of Europe, France had re-established the bimetallic standard of 1785 at the rate of 1 mark of gold to 15.5 marks of silver, 5 franc coins in both metals being equally legal tender for an unlimited amount. The

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(10) See JACOB VINER, *loc. cit.* p. 130.

United States, which had employed a bimetallic ratio of 1:15.25 in 1786, altered it to 1:15 in 1792, to 1:16.002 in 1834, to 1:15.988 in 1837; silver was overvalued in the early period and became the standard, but gold was overvalued in the second period and the US money supply had become increasingly composed of gold.

The restoration of the gold standard in Britain at the prewar parity in 1819 overvalued the pound and caused deflation and depression in Britain, provoking the flexible exchange controversy that followed. Even before resumption (of specie payments) some economists doubted the merits of returning to gold at the old parity. Ricardo had his doubts, thought that resumption would cause a deflation of 5%, and devised his ingot plan to economize on gold, using paper notes for the circulation; he also thought that the gold purchases made by the Bank of England to restore the gold standard would cause deflation in the rest of the world (11). The deflationary period to which resumption led was replete with plans for alternative monetary standards and suggestions for "Keynesian" remedies for public works. Most interesting was the Attwood brothers' proposal for a managed pound with a flexible exchange rate (12).

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(11) According to Viner, Sir W. Heygate said that Ricardo told him soon before his death that he was wrong in predicting 5% deflation: «Ay, Heygate, you and the few others who opposed us on cash payments have proved right. I said the difference at most would be only five per cent, and you said that at the least it would be 25%». See VINER: *Studies*, p. 176; Viner doubts the authentically of the story. The price level dropped steeply from 191 in 1818 to 122 in 1930; it was clear that Ricardo underestimated the potential deflation. Ricardo worried about the effects on prices abroad of the gold-buying policy associated with resumption; on that issue he was correct. Ricardo probably underestimated the effects of resumption on deflation in Britain; by following the law of one price he would assume that the British price level would fall at the same rate as that abroad. However, what Ricardo probably ignored was that the British deflation had to be equal to the rest of the world's deflation *plus* the overvaluation of the pound, which must have been considerable at the time of resumption.

(12) Thomas Attwood (1783-1856) was a member of a Birmingham firm of bankers and the leader of the "Birmingham School," dedicated to a less deflationary currency. Thomas Attwood believed that "falling prices were a serious evil (that inflicted great harm on debtors and) which could not be avoided except through an inconvertible paper currency." Regulation of the currency, Thomas thought, should be entrusted to a legislative commission. He wavered among alternative criteria for stabilization — the price of wheat, the general price level, the rate of interest, the wages of agricultural labor. While recognizing the defects of using wages as a guide, on the grounds of a time lag between changes in the quantity of currency and the resultant changes in wages, he concluded that a combination of interest rates, for short run

The deflationary wave that started in the 1829s and lasted until 1850, led to a world-wide search for new sources of gold. To this scarcity we owe the travels of Alexander von Humboldt whose striking analysis of the sources of gold on various continents made an important contribution to the literature (13). Throughout this period, however, annual production of gold was negligible, always less than two million ounces and usually considerably less. Because silver production had diminished (because of the South American Revolution) the world price level fell. Because of the scarcity of gold no country had an incentive to join Britain on the gold standard. France, as already noted, later joined by the US, ensured monetary unity between the gold and silver standard countries. But there were many developments in banking to compensate partly for the dearth of the precious metals.

1.4 *Another Inflationary Swing: 1850-1873*

The dearth of gold was changed suddenly with the gold discoveries in California in 1847 and Australia in 1851. The wave of deflation was transformed into a wave of inflation from 1850 to 1873. The impact of these discoveries on gold production was dramatic. For the preceding decade, 1841-1850, annual production in the world

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considerations, with wage rates for long run consideration might be the best criterion for determining the rate of increase of the money supply. See VINER, *op. cit.*, p. 213.

Thomas Attwood was a convinced anti-deflationist; he considers the question, why not increase the money supply indefinitely and answers: «Whenever..... the money of a country is sufficient to call every laborer into action, upon the system and trade best suited to his habits and his powers, the benefits of an increased circulation can go not farther.....» Beyond that point further stimulus is "nugatory" or "injurious" (*loc. cit.* n. 12, pp. 212-3). Attwood's importance gained strength from his and his brother Mathias' political influence.

Mathias Attwood (1779-1851) was a Tory (unlike his brother) but joined him in his views on the currency question. In 1830 Mathias proposed a double standard of silver and gold at the rate a little higher than 15 silver to 1 gold.

John Stuart Mill devoted a page and a half to refutation of the Attwoods doctrine, which he believes "was set afloat" by Hume in his *Essay on Money*. Mill's discussion does not seem to pay sufficient attention to the extreme deflation in the 1820s or of the lags of wages behind prices. See *Principles of Political Economy*, London, Ashley Edition, 1909, pp. 550-1.

(13) Baron von Humboldt (1769-1859) published in 1838 a remarkable discussion of the history and present state of the precious monetary metals at that time. Humboldt argued correctly that the dearth of gold production would soon be corrected. See *The Fluctuations of Gold*, New York, Maude Edition, 1990.

averaged 1.76 million ounces. Through the next decade, 1851-60, it averaged 6.45 million ounces. The monetary gold stock of the world doubled from 1850 to 1860, from 50 million ounces. The increase in monetary gold caused gold to depreciate (implying inflation) but by less than would be expected from the change in the rate of gold production alone. The price level in Britain rose from an index of 101 in 1849 to 143 in 1857 (14), after which the price fell back to 128 in 1959.

What prevented an even greater and longer inflation? The answer is the cushioning effect of the bimetallic system. A doubling of the stock of monetary gold is not the same as a doubling of the money supply in a bimetallic system. If, for example, gold and silver count equally (by value) as monetary metals, a 100% increase in the stock of monetary gold would increase the world money supply by only 50%. One of the arguments for bimetallism is that it blunts the effects of new discoveries of one metal providet that gold and silver discoveries are to a certain extent independent (15).

Supply shocks may be cushioned in the short run by the tendency of one metal, after it becomes cheap, to drive the other out of circulation in the bimetallic countries. Thus in France the depreciation of the market price of gold made it profitable to sell gold to the mint and buy silver, the latter being melted or (more probably with silver) exported. The substitution of gold for silver would appear at first to reduce the impact on the money supply of increased gold production, insofar as it reduces the amount of monetary silver in circulation. However that facile conclusion neglects the possible remonetization of silver in countries on the silver standard. Much of exported silver finds its way into the circulation of the silver standard countries and spreads the inflation there until the prices in the silver countries have risen as much as the prices in the gold or bimetallic countries. The

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(14) The level of prices in Britain after 1855 may have been inflated somewhat by the Crimean War.

(15) This effect seems to be ignored by economic writers after the gold discoveries. HUMPHREY and KELEHER, *The Monetary Approach* (op. cit., pp. 75-7) discuss the contributions of Cairnes (following Cantillon) and Jevons on the subject but there is no mention of bimetallism. See also the discussion of MICHAEL BORDO: "John E. Cairnes on the Effects of the Australian Gold Discoveries, 1851-73: An Early Application of the Methodology of Positive Economics," *History of Political Economy*, n. 7, 1975.

cushioning effect in the world as a whole is restricted to the degree of demonetization of the other metal in the world as a whole.

The increased absorption of gold in France temporarily blunted the inflationary impact of the increased gold production. But after 1860 another factor was working in the other direction. After the outbreak of the Civil War both the South and the North abandoned convertibility, exporting gold to finance wartime spending. The export of gold should have called into play the Thornton effect. The price level in Britain did rise somewhat: the index rose from 132 in 1961 to 143 in 1964. But France, on bimetallism, did not experience the same rise in prices. Marcello de Cecco points out that it was the gold exports from the US at this time that created difficulties for the countries on silver or bimetallism and provided a stimulus for the creation of the Latin Monetary Union (16).

As the 1860s wore on, population and production continued to increase while gold production peaked. From 1850 to 1870 the average gold production was slightly over 6 million ounces. In the early 1870s it fell to 5.5 million. As a proportion of a growing stock the rate of gold production was thus declining. The Kondratief index which had been at 101 in 1849 reached a peak of 152 in 1873 and then began its long scarcely interrupted descent to 1896. The inflation came to an end with the panic of 1873.

1.5 *The Swing to Gold and Deflation: 1873-1896*

The third wave, from 1873 to 1896 was deflationary. Gold production had stabilized but growth of population and income, and therefore the demand for gold, continued. Gold production actually decreased to 4.8 million in the first half of the 1880s and was only slightly higher, at 5.5 million, in the second half of the 1880s. But the deflation of the period can be attributed only partly to the stagnation and decline in gold production relative to the expansion in industry.

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(16) Marcello de Cecco points out that "US gold exports to pay for the Civil War," led four countries, France, Italy, Belgium and Italy to react independently, choosing different silver contents for their coins, leading to the international treaty of 1865 forming the Latin Monetary Union. See MARCELLO DE CECCO: *The European Monetary System and its Predecessors* in this volume.

While the production of gold stagnated, the production of silver increased by leaps and bounds. From 1811 to 1840 the annual production of silver had been considerably less than 20 million ounces. From 1840 to 1860 it was 25-30 million ounces. In the decade of the 1860s it was about 40 million ounces per year, but in the first half of the 1870s silver production averaged over 63 million ounces. The silver avalanche was in full swing. Production steadily increased until annual production by the 1890s had reached an average of a little less than 160 million ounces. Given the rapid growth of income and wealth and the demand for money in the last third of the century, the increased silver production might have been absorbed had countries stayed with silver or bimetallism. But this was not to be.

Prior to 1871 Britain was alone in adhering to the gold standard. But by the turn of the century all the major countries, with the exception of China, had shifted to gold. France, the main bimetallic country, suspended specie payments with the outbreak of the Franco-Prussian War. The new German Empire, bloated with the spoils of victory and the gold indemnity of the equivalent of 50 million ounces of gold, moved onto the gold standard, adopting, in 1873, the gold mark of 0.3982 grams of gold as the standard of value. Soon most of the countries of Western Europe joined Britain and Germany on the gold standard. The shift to gold created an enormous increase in the demand for gold and simultaneously a general dumping of silver. Had France resumed specie payments on the ante-bellum basis, silver would have driven gold from circulation and France would have lost her entire stock of monetary gold. All the Scandinavian countries and the members of the Latin Monetary Union including France adopted the gold standard; and finally, in 1879, the United States — now the biggest country — scrapped silver for gold.

There was at that time no chance for international coordination of policies. In 1873 the US was caught up in economic crisis brought on by overspeculation in railway bonds (Jay Cooke panic); almost unnoticed at the time was the "oversight" that led to the virtual demonetization of silver, later called "the crime of '73" (17). No one

(17) The Jay Cooke scandal was caused by overspeculation in railroads which had already developed excess capacity at a time when there was a contraction of greenbacks in New York. When Jay Cooke's banking house closed on September 17, 1873 two

before the middle 1870s brought gold or silver to the mint, but, given the fall in the market price of silver, they would have several years before actual resumption took place had coinage not been discontinued. Had President Grant not inadvertently allowed the demonetization of silver, the US would have been spared the economic stagnation of the 1870s and the deflation of the next two decades. Had the US not itself demonetized silver, it might have been more successful in its campaign to internationalize the silver problem (18).

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thousand banks temporarily suspended payments and the New York Stock Exchange, for the first time in its history, closed. The panic was finally allayed by the issue of $20 million of additional greenbacks by the Treasury.

(18) Signs of the move to the gold standard could already be seen at the International Monetary Conference, called by Napoleon III and presided over by Prince Jerome Napoleon, that assembled in Paris in 1867 and was attended by all the major countries in Europe and the US. A basic, if unscheduled, theme of the meeting was the desirability of a general adoption of gold as the international standard; gold was called the "modern metal" by its proponents. Even Prussia assented to the adoption of gold, although that country had always been on a silver standard, providing a foretaste of the policies actually adopted by the German Empire. It was also agreed to settle on a standard fineness (0.900) for gold; and to coordinate coinage on the basis of five francs (England and Sweden dissenting). Gold coins equivalent to five francs would be accepted as legal tender in all the participating states.

In 1869 the US Congress passed a law securing that the huge public debt of the United States be made payable *in coin*, although much of it had been contracted in depreciated greenbacks. This plum for the creditor class — the national debt at the time was the equivalent of 150 million ounces of gold — was followed up by the demonetization of silver, which meant that the debt would have to be honored in gold! The demonetization of silver took place as a result of The New Mint Code of February 12, 1873, which (inadvertently?) omitted the word «dollar» from the clause empowering the coinage to the lesser pieces; this law was followed by the limitation of the legal tender of all silver coins. Because these acts of 1873 were published during a period of suspension they attracted little public notice; it was later verified that even President Grant had not read the act he had signed. Although the *Bland Act* of 1878 reinstated silver dollars as legal tender the failure to empower their private coinage ensured the victory of gold.

The US government, however, was not blind to the enormous output of silver from the mining states, and attempted to combine with other countries to establish an international convention agreeing on a stable ratio of silver to gold. An international monetary conference was convened by the United States in conformity with an act of Congress (February 1878) inviting the governments of Europe to join in adopting a common ratio between gold and silver for the purpose of re-establishing bimetallism. The Congress met in Paris in August 1878 with twelve countries and all of the Great Powers participating. The American delegation proposed the establishment of bimetallism but after extensive discussion, the European powers agreed that the issue should be left up to each country. The conference came about five years too late; in 1878 it would in effect have been an international price support program for US producers.

Further conferences were held but without agreement on the US plan for bimetallism, perhaps partly because the United States, with the overwherlming share of silver production, was seen as the major beneficiary and the influence of Britain which, as a creditor nation, was comparatively happy with gold monometallism.

The movement to gold was induced by the understandable fear, not to say greed, of the creditor classes of inflation. The more countries that left silver for gold, the more inflationary the silver standard became, and the more deflationary gold became. The gold price level in England, which stood at 152 in 1873, dropped to 83 in 1896.

In the first half of the 1890s gold production increased to 7.9 million ounces, the first installment of that deluge that was to come forth from South Africa. Despite the increased gold production the price level continued to decline for a time. Production of gold had increased but it had not yet caught up to the growth of demand. Demand for gold increased substantially in the 1890s due to the movement onto the gold standard of three great powers: Austria-Hungary, Russia and Japan (19), who all joined the gold standard in the 1890s. The new demand for gold on the part of these countries was sufficient to exhaust the still small but rapidly increasing supplies arriving from South Africa.

1.6 *South African Gold and Inflation: 1897-1920*

A new inflationary phase started in the second half of the 1890s, the year 1896, an inflationary phase that was to accelerate during World War I. The steady increase in supply of gold from South Africa made an important contribution to the increase in prices in the years preceding the outbreak of world war. World gold production had risen, as we have seen, to 7.9 million ounces in the first half of the 1890s; it increased to 12.5 million ounces in the second half. Thus in

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(19) Japanese coinage alternated first to gold, then to silver, and then back to gold. The British had, in 1864, set up a mint in Hong Kong to produce a silver coin to supersede the Mexican dollar which, as a trade coin, had dominated the Orient; but, being unsuccessful, the mint was closed in 1868, upon which the coining plant was bought by Japan. The Japanese mint at Osaka opened in December 1870. The new coinage of Japan was based on the yen, which was 416 grains of silver 0.900 fine, about the same as the Hong Kong dollar, but gold was initially the standard; by 1879, however, the silver yen was made legal tender and the standard of value throughout Japan, interchangeable with the Mexican dollar. In 1897, however, the Japanese government passed a currency law providing for a gold standard. The standard of value was a gold yen weighing 11.574 grains of pure gold, and the coinage of silver yen was brought to a close.

less than a decade gold production had doubled. The rate of increase in production continued, to 15.6 million ounces in 1901-1905, and to over 20 million ounces in the next decade. More gold was produced from 1896 to 1914 than in all of previous human history; and since that time the monetary stock of gold has doubled and doubled again. The twentieth century was in this sense a new golden age.

But it was not gold alone that led to the persistent upward rise in prices in the fifteen years prior to the outbreak of World War I. This was a period of enormous growth in joint-stock banking. Bank deposits had become by far the most important medium of exchange. The great pressure on aggregate demand by the armaments race combined with a great expansion of bank money and the increasing gold supplies from South Africa to produce the moderate inflation from 1896 to the First World War.

The first phase of the 1896-1920 inflation ended with the outbreak of hostilities in 1914. As a result of inflationary finance in Europe and the inconvertibility of the European currencies, gold left Europe for New York, where it became the reserve base for monetary expansion in the United States. The US price level doubled despite the fact that the United States (along with Japan) remained on the gold standard during the war. In 1914 the Kondratief price index was 116. By 1918 it had reached 257 where it remained for another two years until the sharp deflation of 1921.

1.7 *Post-War Paliatives and the Great Deflation*

The price level in 1921 fell to 167 from 258 the year before, a drop of over 35%. Prices in gold then held fairly steady for a few years. A kind of equilibrium prevailed with the United States on gold and the other countries off it. The US held more than half of the world's monetary gold but part of this had been used to support an expanding money stock of the United States. There was a general recognition of the gold shortage,and the Gold Delegation of the League of Nations, meeting in Genoa in 1922, recommended that countries use foreign exchange in lieu of gold in reserves in order to economize on gold.

It would have been possible to establish an equilibrium exchange rate system in the 1920s had a kind of dollar-gold standard been

developed with a limited convertibility of the dollar into gold and other currencies convertible into dollars. But had such a system been formally proposed there would have been powerful objections to it. It would have offended the egos and patriotism of great or once-great powers, who would have objected to the implicit loss of sovereignty, putting the US in the driver's seat of the international monetary system. Britain saw herself in the leadership role, whereas France was jealous of British presumptions in this respect. Besides, in the US itself, with the exception of Benjamin Strong, there was no leader who had even a conception of a pivot role for the US in the international monetary system. Perhaps most important of all, the US was still remote from the European financial scene; the airplane had not yet crossed the Atlantic and telephone communications were in their infancy. Thirty years later, when these arrangements did materialize, none of these objections existed.

It was Germany, reeling from the hyperinflation that had wiped out its public debt and the savings of the middle class, that first re-established its currency on a gold basis. The reorganization of the Reichsbank in 1924, after a trillion-for-one currency conversion, effected the stabilization of the Reichsmark at the old parity (20). The second currency to be restored (and without a currency conversion) was the pound sterling in April 1925. The franc was stabilized in 1927 and devalued *de jure* by about 80% in June 1928. By the end of the decade most of Europe and the rest of the world had returned to the gold standard.

In evaluating the policy of restoring the gold standard there are two major factors to be considered. The first problem is: Were exchange rates correct vis-à-vis one currency and the other? We know now that the pound was overvalued against the dollar and the mark by, say, 15%; and the franc was undervalued against all currencies. The second and more important question was: Were all currencies,

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(20) Currency stabilization was prepared through the establishment of the Rentenbank as a purely temporary facility while the government reorganized its finances, and the stabilization of the Rentenmark. The stabilization was accomplished by a huge devaluation in November 1923, the cessation of further government borrowing from the Reichsbank, the currency conversion and a huge loan of about $200 million (about 10 million ounces of gold). On August 30, 1924 further issue of Rentenmarks was stopped. The Reichsmark replaced the Rentenmark.

and especially the "numeraire currency," the dollar, valued correctly vis-à-vis gold. The answer was no. If one takes at face value the idea that the purchasing power of gold will be stable in the long run, gold was undervalued. The US price level was 50% higher in 1924 than in 1914, and therefore gold was undervalued by one-third. Any attempt to restore a full-fledged gold standard at existing prices was simply asking for trouble, asking for a world-wide deflation of 33%. And with the growth of labor unions and the increased downward rigidity of wages, deflation spelled depression.

It is not hindsight that leads to the prediction of a coming deflation, an "appreciation of gold." The undervaluation of gold was known to a number of economists at the time, including John Parke Young, who was the one-man Commission of Gold and Silver Inquiry in the United States in 1925. In the summary of his report, *European Currency and Finance,* he wrote: «The present purchasing power of gold is about 35% below that in 1913 and about 25% below the average for the years 1778 to 1913. A study of the present forces tending toward an increase in the purchasing power of gold and of those tending in the opposite direction is interesting, but conditions, especially with respect to the demand for gold, have become so changed that prediction as to the future value of gold are hazardous. A large amount of control over the value of gold is now possible, and when exercised judiciously has important possibilities. Efforts should be in the direction of reducing short-time fluctuations in the value of gold and permitting only long-time trends caused by forces which may as yet be beyond control» (21).

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(21) JOHN PARKE YOUNG: *European Currency and Finance,* Washington, Government Printing Office, 1925), p. xvi, in press before Britain restored the gold standard. See also in the same volume the short paper by GUSTAV CASSEL: *The Restoration of Gold as a Universal Monetary Standard,* pp. 205-6. Cassel believed that a restoration of the gold standard was a simple matter, and that «we should already have the gold standard in a whole series of countries if it were not for the false idea that a country is bound to restore the same gold standard that it had before the war». He goes on to say that: «The gold standard, of course, can not secure a greater stability in the general level of prices of a country than the value of gold itself possesses. Inasmuch as the stability of the general level of prices is desirable, our work for a restoration of the gold standard must be supplemented by endeavors to keep the value of gold as constant as possibile. In the last few years the chief danger in this respect has been a fall in the value of gold caused by the concentration of the world's gold supplies in the United States. The superabundance of gold in the United States could have been used, and may still be used, for a

Unfortunately the report goes on to recommend that a fairly stable value of gold be maintained without making clear that a restoration of a general gold standard would force gold to appreciate from its undervalued condition.

Much has been made of Britain's unfortunate decision to go back to gold at an overvalued rate against the dollar. No doubt Britain would have been much better off had she restored gold at a rate of $4.40 or lower. That would have ensured that the pound, and British labor, was not overvalued against the dollar. But it wouldn't have spared Britain her share of the world-wide deflation; that would still have occurred. As it was, Britain checked out of the subsequent deflation in September 1931 when she let the pound fall (it later went down below $3.50, only to rebound after the devaluation of the dollar).

The focus of attention on the overvaluation of the pound distracted attention from the vastly more important problem of the overvaluation of all currencies against gold. The disequilibrium in the 1920's was *systemic*, and the problem lay not — or not only — with the dollar-pound exchange rate but with the price of all currencies in terms of gold. Had the problem been realized at the time an international conference convened in 1924, composed of the US, Britain, Germany and France, could have decided collectively on what dollar price of gold would have enabled the rest of the world to go back onto a full-fledged international gold standard without a gold shortage (22).

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very considerable rise in the general level of prices. That such a rise has not been allowed to take place is of the greatest credit to the monetary authorities of the United States.

With the actual state of gold production it can be taken for certain that after a comparatively short time, perhaps within a decade, the present superabundance of gold will be followed, as a consequence of increasing demand, by a marked scarcity of this precious metal tending to cause a fall of prices. It is in the interest of the United States as well as of the world at large that violent movements up and down in the general level of prices shall, as far as possible, be prevented. The amount of gold which the United States is now keeping in reserve will perform a good service when once we shall have to face a growing scarcity of gold».

(22) Would an international conference have come up with the "right" answers? It is extremely doubtful. Keynes was then advocating an inflationary policy in the United States in order to ship gold to Europe, a policy that in fact later took place, leading to the stock market boom and its disastrous aftermath. Charles Gide at that time ridiculed the notion of gold hunger in Europe: «Not at all; what would we do with this gold? We should rather leave it in the possession of the United States, who, like King Midas,

The deflationary wave that began slowly in 1925 and lasted until late in the 1930s, was caused by the acute scramble for undervalued gold among countries restoring or newly adhering to the gold standard. The use of foreign exchange as a supplement to gold postponed the deflation for a few years, but these balances, largely sterling and dollars, were unstable. With confidence shattered after the 1929 crash, the end of American lending, and the collapse of key banks in Central Europe, sterling balances were cashed in for gold (23). The

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before long will vainly seek to rid itself of it». See: "Commission on Gold and Silver Inquiry," *European Currency and Finance*, by JOHN PARKE YOUNG (Washington: Government Printing Office, 1925). Among the professors in that volume only Gustav Cassel had the prescience to worry about the coming shortage of gold which he predicted might come within a decade.

(23) PAUL EIZING, in his *Behind the Scenes of International Finance*, London, MacMillan, 1932 blames the breakdown of the gold exchange standard on the machinations of the international financial diplomacy of France, a gross exaggeration because the gold exchange standard was already doomed on its birthday. His argument does, however, shed light on the relation between political and economic motives of governments at that time. Einzig argues that the French attempted to make France become the financial dictator of Europe using first reparations policies prior to 1927, and then financial policies. The financial policies included first undervaluing the franc in order to acquire a huge gold base at the expense of other countries, and then withdrawing gold from London, to the point of creating a sterling crisis. Einzig believed these policies were dircted mainly against the British, but also at the Americans, who had sinned in helping Germany too much, thwarting France's aim of dominating the continent by building a security net of alliances around Germany.

Poincare (whom Einzig considered the greatest financial statesman of the age), had stabilized the value of the franc at 124 to the gold pound in 1926, about $.04, a devaluation of 80%, wiping out most of French franc-denominated debt. At this exchange rate the French price level was 20% below the world price level: it brought about a repatriation of capital, large gold imports, and a strong economy.

In May 1927 the Bank of France withdrew gold from London, to the dismay of England, partly because France had not yet adopted the gold standard. At a conference of central banks, held in Washington in August 1927, the Bank of France agreed not to make any purchases of gold, either from the Bank of England or in the open market, without the consent of the Bank of England. The principle, that no central bank should withdraw gold from another except with the consent of the latter, became the cornerstone of what was meant by international financial cooperation.

But after the restoration of the gold standard in France in June 1928 France began to draw large sums of gold from London, totalling, up to the suspension of the gold standard in Britain in September 1931, no less than 136 million pounds sterling worth of gold or, say, 34 million ounces. Einzig documents point by point British statements or actions contrary to French policy followed gold withdrawals from Britain.

The failure of the Creditanstalt, announced on May 11, 1931, brought into the open the rift between France and Britain. Austria had planned to issue a loan to reconstitute the bank and France had agreed to take up part of it; after a considerable delay, on June 17, France informed Austria that she would not support the loan unless Austria withdrew from the proposed Austrian-German Customs Union. Austria refused and the

deflation in agricultural products started in 1928, accentuated in financial assets with the crash of the New York stock market in 1929, and steep general deflation in the years 1930-1934 (24). The pound,

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Bank of England took up the whole amount that Austria needed, to the irritation of the French. The French then tried to embarrass the British, according to Einzig, by withdrawing gold on private account, expecting to be able to step in at the last minute with "the grand gesture", saving sterling, and making evident the extent of British dependence on France. Thus the big French banks (but not the Bank of France) withdrew between 40,000,000 and 50,000,000 pounds sterling in the two months before the suspension. Nothing was done in France to stop these withdrawals or offset them with countering policy at the Bank of France. By the end of July the reserve of the Bank of England had fallen to 130 million sterling.

At this point the Bank of France reversed its policy, fearful that the threat of collapse might bring on its actually, leading to large French losses on their sterling and increasing Britain's competitiveness in world markets. It started to support sterling, buying anything offered on the market; the French press was instructed to shift from pessimism to optimism about sterling. Britain now needed a loan and the French agreed to participate up to half provided that gold were earmarked from the Bank of England's reserve, issuing an ultimatum to Britain to accept the French terms or suffer the withdrawal of French support of sterling. Governor Norman, the object of animosity in the French press because of his support for the Austrian loan, wanted to reject the French terms but was overruled by the Directors of the Bank; Montagu Norman then went off on an extended holiday to Canada for reasons of health and was not, as it turned out, to be in England when Britain suspended.

Towards the middle of September France had over 125 million ounces of gold, whereas Britain had less than 33 million. Franche had large holdings of sterling and dollar balances and was thus in the driver's seat in the world of finance. The French now granted credits freely to Britain, fearing that a collapse of sterling would weaken France's power to control British policy. On September 18 a new loan was needed, and France agreed to participate in half of it, but the United States refused. On September 20 it was announced that it was necessary to suspend the gold standard.

(24) Sixty years after its beginning there is no general agreement on the causes of the great depression. There are several possibilities: 1) the collapse of expenditure (Keynesian and econometric); 2) the collapse of the money supply (Monetarist); 3) the negative wealth effect of the stock market in 1929; 4) the Smoot-Hawley tariff, Congressional news of which reached the stock market on the eve of the crash (Jude Wanniski); 5) the slow-down in the rate of population growth (Clarence Barber); 6) the high real interest rates with tight money and falling prices (Meltzer); 7) the reparations and debt problem; 8) increasing monopolies in the final stages of capitalism (Marxist); 9) secular stagnation and the decline of investment opportunities in mature cpitalism; or 10) the deflationary pressure exerted by undervaluation of gold caused by the World War inflation (liquidity shortage theory). For a discussion of some of these theories see PETER TEMIN: *Did Monetary Forces Cause the Great Depression?*, New York, Norton, 1976; and CHRISTIAN SAINT-ENTIENNE: *The Great Depression: 1929-1938*, Stanford: Hoover Institution, 1984, p. 44; Wanniski's analysis is presented in his *The Way the World Works*. Meltzer's contribution is contained in "Comments on the Great Depression", in KARL BRUNNER (ed.): *Great Depression Revisited*, Boston, Nijhoff, 1981, pp. 148-64.

Only the liquidity-shortage theory explains the cause and precise timing of the collapse, but a complete explanation must take into account the special wealth effects

with the most overvalued currency, was the first to fall; the franc, with the least overvalued currency relative to gold, was the last to be devalued.

A transition period from, 1931 to 1936, thought of as chaos by the framers of the Bretton Woods Agreements a decade later, saw the vain efforts of first the United States and then France to hold onto the gold standard. Had the US gone off the gold standard at the time Britain did or soon after, much of the misery of the depression would have been avoided. By prolonging the inevitable the harm was done without, in the end, saving the gold standard. The US went onto flexible exchange rates in 1933 and then devalued the dollar to 1/35 of an ounce of gold in 1934. This sealed the fate of the franc; France struggled vainly to hold on to gold at the expense of severe deflation. (When the French, on October 1, 1936, did devalue, it was by too little and only resulted in further disequilibrium until, on June 30, 1937, France went off the gold standard entirely). By the end of 1936 all currencies had devalued against gold, established controls or had flexible exchange rates. Too late, gold was given a correct valuation.

The *Tripartite Agreement* of 1936, involving the US, Britain and France, represented a start toward the re-creation of an international monetary system. It anticipated the IMF agreement in its provisions regarding consultation and notification about exchange rate changes. It was finally recognized officially that exchanges rates were an international matter and a necessary subject for consultation. But by 1936 the three countries had become unequal. Since 1934 the US, now with the strongest currency, had the upper hand; the next era properly begins not in 1936 but in 1934 (25).

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of the stock market crash, the retreat to economic nationalism, the increased debt burden caused by deflation, the collapse of American lending abroad, the reparations fiasco, and the banking crisis. There is no doubt that the fall of expenditure and the money supply were inextricably involved; they are almost a definition of recession. But the gold shortage theory provides an explanation of why those changes in expenditure and money occurred.

(25) Perhaps it is not out of place here to mention the comments on the inter-war period made by Per Jacobsson when he was Managing-Director of the International Monetary Fund in 1958. In a speech presented at the Basle Centre for Economic and Financial Research, June 11, 1958, Jacobsson discussed the errors made in the 1920s in re-aligning exchange rates, and the instability of the fluctuating exchange rates that followed the breakdown, emphasizing the overshooting of flexible rates and the consequent destabilizing effect on prices. He then cites four "other lessons" which

1.8 *The Gold-Dollar Standard: 1934-1971*

The period from 1934 to 1971 was characterized by a monetary system in which only the dollar, for most of the period, was convertible into gold. The monetary character of the new era was set by the dollar price of gold. All the other currencies were either pegged to the dollar, managed by exchange controls, or flexible. For much of the period the dollar meant money. But the era had three distinct phases. The first phase, from 1934 to 1950, was the period of the dollar shortage when the dollar is better than gold (26). In the second phase, from 1949 to 1959, the dollar is "only" as good as gold. In the third phase, from 1960 to 1971 the dollar is decidedly not as good as gold. Corresponding to these three periods are, respectively, very low, rising and high interest rates.

The devaluation of 1934 at least partially corrected the problem of the undervaluation of gold and eliminated the excess demand for it. The dollar value of gold reserves increased by 60% creating excess reserves in the US monetary system; the Federal Reserve gold requirement backing liabilities was 40%. The demand for gold had been cut suddenly when the US Treasury forcibly exchanged currency for the US gold coinage, and the government enacted a prohibition on Americans holding or trading in gold. The dollar was now better than

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should be kept in mind: 1) the dangers of unwise lending between 1925 and 1930, especially short-term lending for long-term purposes by the United States; 2) the US imposition of tariffs when she was a major creditor; 3) undue accumulation of gold by France, amounting to world production of several years; this arose largely because of the undervaluation of the franc in 1926; and 4) the failure of the system to mobilize financial resources quickly in the event of a crack in the banking structure such as that which developed with the failure of the Osterreichische Creditanstalt in May 1931. What was then needed was a lender of last resort of the kind the IMF became in the post-war period. See: *International Monetary Problems: Selected Speeches of Per Jaccobsson, 1957-1963*, Washington, International Monetary Fund, 1964, pp. 49-66.

Jacobsson does not seem to have taken into account in this lecture the general undervaluation of gold which would have undermined the system eventually even without these immediate factors; he could hardly have done so, given his position at the Fund, without inviting attention to the same mistake perpetrated in the post-World War II period.

(26) The term "dollar shortage" was due to Charles Kindleberger. John Chipman, in a paper presented to the Eastern Economic Association Meetings in Baltimore in March 1989, has traced the literature in Britain on the dollar shortage back to 1938. The dollar shortage (1936-1949) was due to the overvaluation of gold with repect to the dollar, at a time when private gold holding was prohibited in the United States.

gold and the Treasury, the residual buyer, had to take up the excess supply in the world market. There were even rumors that the US might change its policy, giving rise to a "gold scare". Dollars emerged as a world currency.

War preparations in Europe reinforced the excess supply of gold against dollars. The Thornton effect was brought into play with gold exports stemming from deficit spending in Europe to pay for rearmament. Capital flight from central Europe reinforced the Thornton effect and brought on a "Golden Avalanche"(27). By 1938 the US had captured three quarters of the world's stock of monetary gold; it was back to an even stronger position internationally than it had been in following World War I. Gold was no longer stable, as far as the US was concerned, in the sense that she could stabilize her currency to gold and expect to have a stable economy. It was now the stability of the dollar that gave gold its stability, not (as say in 1879) the stability of gold that gave the dollar its stability. Jupiter had become bigger than the Sun. For more than two decades, from 1936 to 1958, US monetary policy was not dominated in any important way by the condition of the US balance of payments.

The monetary gold influx to the US was the key to recovery from the great depression. However, the Federal Reserve blocked the recovery in one of its greatest blunders. There had been substantial monetary expansion since devaluation in 1934 which the Federal Reserve mistook for inflation. It is true that the price index had increased, taking 1929 as 100, from 80 in 1935 to 84 two years later. But the fact that the consumer price index was still far below that of 1929, the fact that President Roosevelt's goal had been reflation, the fact that unemployment was still over 14% of the labor force, and the fact that in 1936 real GNP had only just reached the 1929 level, should have convinced the Federal Reserve that expansion was the best policy even if it involved a moderate reflation. Instead the Federal Reserve sterilized the gold inflow and flung the economy into the deep recession of 1937-1938. Unemployment increased from 7.7 million to 10.4 million or 19% of the labor force in 1938.

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(27) See F.D. GRAHAM and C.R. WHITTLESEY: *The Golden Avalanche*, Princeton' 1939; the authors advocate flexible exchange rates.

The recovery of employment from the 1937-1938 recession took until 1940, after which wartime demand finally brought the devastating 1929-1939 depression to an end. As with the last war the US stayed on gold throughout; but in contrast to World War I, the war was fought with cheap money and unbelievably low interest rates. The great, almost painless, American war effort was accomplished through the utilization of excess capacity that had existed because of the great depression.

Long before the war ended, plans were being prepared for the post-war international economy. There were four pillars on which the stability of the post-war economy was thought to depend: 1) the international monetary system; 2) long-term capital for reconstruction and development; 3) tariffs and trade; and 4) international aspects of the unemployment problem. The Bretton Woods Conference dealt with the first two problems, and resulted in the creation of the International Monetary Fund and the International Bank for Reconstruction and Development, the so-called Bretton Woods twins. The problem of tariffs and trade was handled on a ad hoc basis after the war through the *General Agreement on Tariffs and Trade*, an agreement that upgraded itself into an institution, GATT. The fourth issue dealing with international aspects of unemployment and other trade practices was embodied in the *Havana Charter*, which fell afoul of the US Congress after the opening of the Cold War and the belief that, in a world of restrictions, the US (and perhaps Switzerland) would be the only country to abide by its regulations.

The IMF was a set of regulations, some gold and a bag of currencies (28). The original task posed to his Treasury department by President Roosevelt had been to establish the conditions for a world currency, but second thoughts soon intervened. In view of US preponderance and the role of the dollar, the idea of a world currency distinct from gold and the dollar was scrapped. It was the *White Plan*, rather than the *Keynes Plan*, that was adopted. Instead of a world bank producing its own currency backed by gold and member country currencies, the Fund became a regulatory body, the manager

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(28) See BRIAN TEW: *International Monetary Cooperation, 1945-1952*, New York, Longmans, Green & Co., 1952.

of a currency cartel, and a short-term lending agency. Gold was reinstated as the numeraire of the system, while the US gold dollar became the unit of quotation.

The articles of *Agreement* of the Fund were, as a matter of principle, symmetrical among countries with respect to the rules and regulations. Each country was required to state the par value of its currency in gold, or the 1944 gold dollar, worth 1/35 of an ounce. Each country was also required, according to the original articles, to maintain the exchange values of all other currencies of member countries on its own territory within 1% of its par value. The exchange margins were an attempt to simulate (and enlarge) the gold points of the gold standard. Countries were allowed to change their stated par values with the consent of the Fund, and it was understood that the overwhelming burden of the doubt would be given to the country in the event of a "fundamental disequilibrium". The British, remembering 1931, had stipulated that they would devalue rather than face unemployment, and it was therefore generally considered that high unemployment and a deficit in the balance of payments constituted a fundamental disequilibrium, qualifying for devaluation. The system set up was not a fixed exchange rate system but an adjustable peg system (29).

It is necessary now to make a distinction between the provisions for the exchange system in the IMF articles of *Agreement* and the actual exchange system as it turned out. It is perhaps a credit to the architects of the Fund that the *modus operandi* of the dollar standard could be squeezed into the Articles, with by-laws rather than an amendment. When the Fund opened for business in 1946 two considerations had to be dealt with to bring the regulations into line with the real world. First, the key currency system (30) in which other

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(29) James Meade first characterized the Bretton Woods System as an "adjustable peg system". In reality, however, the short run stability was self-reinforcing and quickly turned into a long run stability.

(30) See J.H. WILLIAMS: *Post-War Monetary Plans*, New York, Knopf, 1947, and C.P. KINDLEBERGER: *International Economics*, Homewood, Illinois, Irwin, 1958, Chapter 24, and especially Kindleberger's retrospective on the key currency idea in "How Ideas Spread Among Economists: Examples from International Economics", in *The Spread Among Economists: Examples from International Economics"*, in *The Spread of Economic Ideas*, eds. David Collander and A.W. Coats, Cambridge, Cambridge University Press, 1989, Ch. 5, especially pp. 51-2.

countries pegged their currencies to the dollar, had to be accommodated; and second, the US practice of pegging gold rather than interventing in the foreign exchange market. The articles of *Agreement* said nothing about a key-currency system, the first problem, but they did fortunately say something about the second problem of a currency that is pegged to gold.

At the time the Fund opened its doors for business in 1946 few officials, bankers or economists had a clear understanding of what the actual exchange system was. Since 1934 the dollar had become the supercurrency. With gold pegged at $35 an ounce no other country had any incentive to peg to gold; since most other currencies were inconvertible even into the dollar there was little consideration of gold convertibility of the other currencies. The dollar system grew out of the practices of the real world which meant, in fact, that the Fund regulations had to be accommodated to the system, not the other way around. The gold practices of the US could be accommodated easily within the Articles. There was a special provision in Article IV (Article IV-4-b) that enabled a country that was buying and selling gold freely at a fixed price to avoid its obligation of intervening in the exchange market. In 1949 the US Secretary of the Treasury wrote a letter to the Managing Director of the Fund asserting that the US was buying and selling gold freely (31). That took care of the unique US practice of intervening in the gold market and not in the foreign exchange markets.

There was still the first problem mentioned, that of sidestepping the Fund regulation that required each country to keep its currency within 1% margins around parity against every other currency. The approach to this problem took advantage of the solution to the second. It was decided that if a country was stabilizing its currency against a *convertible* currency, it was deemed to be satisfying its obligations under the exchange rate provisions of the Fund. Instead of maintaining margins around the par values of every other currency within its border, a country could instead peg its currency to a *convertible* currency, and be spared the need for intervention in other

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(31) The word "freely" is to be taken *cum grano salis* because US citizens had been prohibited, since 1934, from using gold for any monetary purposes.

currency markets. The dollar was the only convertible currency so countries could peg their currencies to the dollar and thus be deemed to be satisfying the articles of *Agreement* regarding exchange rate practices.

The special accommodition to the dollar arose from the fact that in 1945 the US was the superpower; it accounted for 80% of the world's industrial production, had three quarters of the world's gold stock, had won the war and had, besides, the atom bomb. Its power at this stage was unparalleled. Of course with the rapid recovery of Europe, the US share of world output fell quickly, but even so the US produced 40% of World Product a decade after the war. The dollar became the world's unit of account, key currency, unit of contract, store of value, medium of exchange, intervention currency, invoice currency, unit of deferred payments and reserve currency.

The first phase of the dollar, when it was better than gold, ended in 1950. Four factors contributed to the turning point when it became "only" as good as gold. The first factor was the US inflation during and after the war that had halved the purchasing power of the dollar and gold; the second factor was the great devaluation of sterling and associated currencies in 1949; the third factor was the US recession of 1949-1950; and the fourth factor was the Korean War which brought on another burst of inflation. The weakening of the dollar was confirmed by the Federal Reserve's need to abandon its pegging of interest rates at the wartime 2% level. The Treasury, faced already with the deficit financing needs of the Korean War, rejected the central bank's arguments and Truman demoted the Chairman of the Federal Reserve Board. The much-publicized "accord" only provided for consultation between the Federal Reserve and the Treasury; independence was not achieved until the Eisenhower administration took office in 1953 (32).

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(32) The Chairman of the Federal Reserve was Marriner Eccles, who was appointed by Roosevelt to replace Eugene Black in 1935. Eccles' warm relations with Roosevelt were not duplicated by his successor; Eccles had a running dispute with Treasury Secretary Snyder who insisted that the Reserve continue the arrangement of pegging bond prices that had been made during the war. Truman fired Eccles and appointed Thomas McCabe in his place but offered the latter the position of Deputy Chairman which Eccles accepted. But even with McCabe as Chairman, the conflict between the Federal Reserve and the Treasury continued, leading to a meeting with

The US gold losses started during the Korean War, and after that there were calls for an increase in the dollar price of gold. Nevertheless the dollar, backed by two thirds of the world's gold stock, appeared for a time to be as good as gold. In 1954 the London gold market opened, creating a new drain on US gold through the private market. When Britain sold gold to the market for dollars the Bank of England converted the dollar proceeds into gold from the US Treasury (33).

Two factors, not widely realized at the time, emasculated the adjustment mechanism. The first factor was the Federal Reserve practice of sterilizing gold flows. Under a gold standard gold losses would automatically reduce the reserve base of the banking system and tighten monetary conditions, working in the direction to correct the balance of payments deficit. That did not happen because whenever the US sold gold (withdrawing money from circulation) the Federal Reserve would buy bonds (increasing the amount of money in circulation), nullifying the monetary effects of the gold loses.

The other factor arose from the practices of foreign countries, as Jacques Rueff pointed out. In the 1950s the European countries ran balance of payments surpluses, finally replenishing their reserves. If the dollars accumulated were held, they would be taken off the market, tightening US bank reserves. But the European central banks reinvested their surpluses in liquid earning assets in the US, such as

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Truman, on January 31, 1951, about which he writes in his memoirs: «I was given assurance at this meeting that the Federal Reserve Board would support the Treasury's plan for the financing of the action in Korea...». Throughout February the consultations between the Federal Reserve and the Treasury continued, with William McChesney Martin sitting in for Secretary Snyder (who was ill) at these meetings. When the famous *Accord* was announced on February 4, 1951, it was not clear what the agreement was, except that it made an arrangement for consultation between the Federal Reserve as to policy. On March 31, 1951 McCabe resigned (possibly in protest, possibly because he did not think the Reserve would eventually win); Martin, a Treasury man, was nominated and confirmed to replace him.

It is a mistake to think of the *Accord* as an outbreak of independence; that came only "in 1953 when the Eisenhower administration granted it without a struggle." For the detailed account of the personality clashes, and also Eccles' view that banking interests in California (Bank of America) were responsible for his demotion, see *The Federal Reserve System, A Study*, prepared for the use of the Joint Committee, conducted by Hon. Wright Patman, January 3, 1977, Washington, US Printing Office, 1976, pp. 128-36.

(33) A gold market in the US was of course prohibited.

Treasury bills, which replenished the dollars. Both actions ruptured the adjustment mechanism (34).

The US started to worry about its gold position in the late 1950s. The 25% gold cover of Federal Reserve liabilities would be exhausted if gold losses continued at the pace of 1958. If gold reserves fell below the 25% gold cover, the Federal Reserve would be required by law to raise interest rates whatever the needs of the domestic economy. After two decades of ignoring the balance of payments, a moment of truth had arrived.

Following the establishment of external convertibility of the European currencies in 1958, European countries started to convert dollars into gold in a substantial way. From 1950 to 1959 the US had lost about 100 million ounces of gold. In 1959 the US had 557 million, still over half the world's gold stock. But it was clear that the US could not continue to lose (sell) gold at the current rate of loss. The balance of payments of the US had been theoretically in continuous deficit as the rest of the world accumulated dollars and gold in the 1950s. Robert Triffin presented, in 1959, his famous paradox, that if the US corrected its balance-of-payments deficit the world would not have enough reserves for growth and there would be a liquidity shortage; on the other hand if the US did not correct its deficit, dollar liabilities would soon exceed gold reserves, the US dollar would become inconvertible, and the international monetary system would break down.

The second phase of the gold-exchange standard formally ended in October 1960 when, in the heat of the Nixon-Kennedy election campaign, Britain and the United States got their wires crossed. There was speculation about the gold policy of the new administration and Kennedy's position on gold was not then known. The British stopped feeding the London gold market, fearful that the new administration

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(34) If the Federal Reserve increased bank reserves whenever the foreign central banks hoarded dollars, the policy of hoarding dollars would not have any point. To save the $35 gold price the Federal Reserve would have had to follow a pure gold standard policy in the 1950s. This would have been deflationary, attempting to roll back the wartime and post-war inflation. I am not, therefore, suggesting that the US should have followed a much tighter monetary policy. It would have been better to declare inconvertibility in 1958 or 1961.

might not be willing to convert the gold into dollar. The price of gold at once shot up to 40 an ounce in the (now) free market. It was only after Senator Kennedy had pledged to keep the $35 price of gold and to continue convertibility that the bubble burst and the British resumed gold sales in the London market. The significance of the episode was in verifying that the dollar was no longer as good as gold.

In the next three years the US lost 98 million ounces of gold, leaving 459 million ounces in 1962; in the next six years it lost another 146 million, leaving only 311 million in 1968; and by 1972 the gold stock was down to 276 million ounces. Most of the gold went to the Continent. In 1955 five countries, Germany, France, Italy, the Netherlands and Belgium had collectively 113.7 million ounces; by 1966 they had 434.3 million, of which France held 149.7 million and Germany 122.6 million.

The European central banks had every right to convert dollars into gold according to the letter of the US commitment to gold (its 1949 letter). The US nevertheless had grounds for objection, much like the objections made in England three decades earlier when France, in May 1927, converted sterling into gold. Just as France was not (yet) on the gold standard in 1927 so the European countries were not on the gold standard in 1958; and never indicated their intention of going on it. General De Gaulle had called for a return to gold but no country dared to risk (or found it profitable to risk at the current price of gold) convertibility. The Kennedy-Johnson commitment to gold at the "sacred" price of $35 an ounce, made in the heat of the 1960 election campaign, was a commitment it would have been wiser not to honor (35).

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(35) As already noted, the French attempt to convert sterling into gold in May 1927 led to the Washington agreement in August 1927, under which no central bank would draw gold without the consent of the host country. That solution would have been worth reviving in the early 1960s. But had the US withdrawn its 1949 letter, the US would have been required to intervene in the currency market of every other country, which would be impractical. The exchange rate system would then have broken down, just as in 1971, but before the US had lost most of its gold. The US would have been in a much stronger position to reform the international monetary system in 1961 than it was in 1971.

I was not, however, in the 1960's among those who argued for an increase in the price of gold; I thought that a solution could be worked out with a new world currency. In some testimonary to the Joint Economic Committee in 1966 I argued that the dynamic working of the gold exchange standard depended upon two dynamic forces:

Meanwhile the Group of Deputies of the Group of ten, assigned by the IMF to find a solution to the problem of international monetary reform, settled on the creation of Special Drawing Rights within the International Monetary Fund. They were called SDR's to distinguish them from ordinary drawing rights at the Fund. Under the charter of the Fund each country had contributed a quarter of its quota in gold or dollars, and the rest in local currency. These deposits gave them

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US monetary policy adjusted to maintain convertibility of the dollar, and foreign (European) gold/dollar reserve ratios committed to stability of the world price level. I argued that to preserve the gold exchange standrd at the existing price of gold, the adjustment rules would have to be reversed, with the US taking responsibility for the world price level and the Europeans taking responsibility to maintain dollar convertibility. The system however would break down if America and Europe had different views of the optimum inflation. For a theoretical formulation of this model see my essay "The Crisis Problem" in *International Economics*, New York, MacMillan, 1968, Chapter 20.

In the middle 1960s I argued that the international monetary system would work better if countries held their reserves in the same currency or commodity to which their own currency was pegged since that was the currency required for intervention purposes. In a comment on a presentation by Sir Roy Harrod, *apropos* this point, I suggested that countries (like Britain) that pegged their currencies to the dollar should hold their reserves in dollars, not gold, and if instead the British government wanted to keep its reserves in gold it should peg sterling to gold. Similarly a country like Australia, that (then) pegged its currency to sterling should hold its reserves in sterling. The same argument applied to the countries on the Continent, which had accumulated large stocks of gold. The discussion continued as follows.

Mundell: «. . . I have suggested that countries should hold their reserves completely in the currency to which they peg. I would like to have Sir Roy's argument as to why he thinks, as he does, the British should hold their reserves in gold when they peg the pound sterling to the dollar, not to gold».

Harrod: «It is convenient for all operations where it's a question, say, of supporting sterling, to be in dollars. But the UK is under legal obligation, under the Articles of Agreement of the International Monetary Fund, to keep the pound within the prescribed limits, as against the Deutsche Mark, or any of the other currencies that are members of the IMF. It is a question of technique. There is no difference of principle».

Comment from the Floor: «There is a different article applying to the US dollar. The United States is not obligated to peg its currency to any currency».

Harrod: «Yes. But that is for a particular reason. . . The legal obligation of the British to maintain the pound, within the prescribed limits, as against say, the Deutsche mark is exactly the same as its obligation to maintain the value of the pound as against the dollar. But it would be a nuisance for the Bank of England to be operating in a number of different exchange markets. It would be more cumbersome. So the operations go via the dollar, but the legal obligation is the same for the currencies of all countries who fulfill Article VIII of the International Monetary Fund».

Kenen: «. . . The price of the pound is filed with the Fund in terms of gold, not in terms of dollars. The way it is done, by agreement, is to operate in dollars. But I see no logical inconsistency in holding some part of one's assets in the form of gold rather than dollars. It doesn't seem to me a matter of great principle or moment».

"drawing rights" a member could utilize if it got into balance of payments difficulties. When a country "drew," it deposited an amount of its own currency for the equivalent amount of foreign currencies it was "drawing." Thus the Fund holding of a member's currency was in equilibrium when it was equal to 75% of its quota; but a member was given the overwhelming benefit of the doubt to draw the first or gold "tranche" (36) which represented the one quarter of the quota the

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Mundell: «It seems to me a matter of great importance because the European countries — the continental countries — have been converting their dollar assets into gold.) .) . (But) they don't use gold for exchange operations. They buy and sell dollars. And in order to be able to keep to their exchange rate obligations, they have to convert their gold first into dollars, before they can supply dollars when their currencies are weak. I think you could have a system in which countries in the dollar area (the countries that continue to peg to the dollar) hold their reserves in dollars, and in which the European countries which now hold nearly all theur reserves in gold) peg their currencies to gold. Together with the United States, European countries should move onto the Article IV-4-b clause of the Fund which frees them from the need to buy and sell foreign currencies. Then you would have a two-pillar system, Europe with about $16 or $17 billion in gold (about 460 million ounces) and the United States with $14 billion of gold (400 million ounces), and both groups, perhaps with or without the United Kingdom, would then be engaged in stabilizing the price of gold».

That system was not acceptable at the time since every European country wanted to buy gold and none to sell it at its undervalued $35 price. The gold pool, which had been created in the early 1960s to ration out the scarce new supplies of gold from South Africa among the eight members, was disbanded in the spring of 1968; France backed out of it as soon as there was no net excess supply on the market and price stabilization would have met sharing gold losses.

The political trauma created by the Viet-Nam war on both sides of the Atlantic made it difficult for Europe and America to agree on a satisfactory alternative to the dollar-gold standard; the unpopularity of South Africa and the Soviet Union made the natural solution, an increase in the gold price, politically unpopular. The IMF Articles made a provision for gold scarcity: it was a universal reduction in par values, equivalent to a world-wide increase in the price of gold.

In my 1968 Testimony (*Joint Economic Committee Report* on the Hearings of September 1968) I argued for the creation of an international currency backed by gold and convertible currencies, the object of which would have created a fully liquid instrument called "intors" that would have a gold reserve ratio equal to the ratio of gold to total assets of the "International Monetary Pool" that would create it. I still believe that the solution lies along these lines, supplemented perhaps by commodity assets from those countries with inconvertible currencies.

(36) In Fund language, a tranche is a quantity of money equal to one quarter of a country's quota. The Fund initially held (theoretically) a quarter of a country's quota in gold and three quarters in national currency. A drawing within the "gold tranche" meant borrowing that would leave the Fund's holdings of a country's currency between 75% and 100% of quota. The first "credit tranche" was a drawing leaving Fund's holdings of currency between 100 and 125% of quota. The super gold tranche referred to the case where the Fund held less than 75% of a country's quota in currency.

country had originally deposited in gold. The currency to be drawn was the currency needed for exchange transactions and that, of course, was usually dollars.

The drawing rights of the members of the IMF were completely backed by gold or currencies (37). Special Drawing Rights were distinguished from these ordinary drawing rights in that they were not backed by anything except the commitment of countries to accept them in payment for obligations amounting to three times their own allocation. Because the SDR's would always be equivalent to 1 ounce of gold, they were thought of as a substitute for gold, "paper gold." The gold stock could be "stretched" by the addition of SDR's which, it was argued, would be willingly held because of the gold guarantee.

The SDR's were agreed upon by the G10 Deputies in late August 1967 and presented for discussion at the IMF annual meetings in Rio di Janeiro in September 1967 (38). The (First) Amendment to the

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(37) The Articles of Agreement required that each member maintain the gold value of the currency in the Fund. If a member devalued its currency, it would have to contribute a proportionate amount of its own currency into that already existing in the Fund. However, many of the currencies held by the Fund were inconvertible and therefore unusable by other members, reducing the Fund's liquidity by a corresponding amount. No country would have any reason for drawing an inconvertible currency. The currency drawn would weaken on the exchange market and it would be unmarketable if inconvertible. The currency that countries needed for exchange transactions was, of course, mainly the dollar because it was the dollar to which other currencies were pegged. After the dollar became "weak" it was inconvenient for the US to have drawings in dollars. The Fund then became illiquid to the extent not only of the inconvertible currencies but of the dollars as well. To avoid this problem the strong currencies (e.g. marks, francs) were drawn, quickly reducing the Fund's stocks. To meet this problem, and to allow for the possibility of a US drawing, a new facility was arranged. At the Vienna meeting of the IMF in 1961 an agreement was made, called the General Arrangements to Borrrow, providing credit to the Fund in the event the Fund needed to repenish its liquidity; the US quota was $2 billion, Germany's was DM 4 billion, and France's was FF 2.7 million. For the agreement see «The International Monetary Fund: 1945-1965, vol. III, *Documents*, Washington, IMF, 1969, pp. 247-52.

The details of the agreement would not have been necessary had all the currencies in the Fund been convertible. The original idea of the Fund was revolving credit with a rotation of the deficit countries. It was not envisaged that one set of currencies would be permanently inconvertible. The activities of the Fund were hampered throughout by inadequate resources and the inconvertibility of a substantial part.

(38) That meeting witnessed a clash between the US and French authorities over the use of dollars to help finance the war in Viet-Nam, an idea that was rejected in a forceful speech in praise of gold by the French Minister Debreu of Finance. More important however was the euphoria created by the hope that the SDR's were the embryo of a world currency.

Also at that meeting Dr. Otmar Emminger, the Chaiorman of the Deputies of the

articles of *Agreement* was ratified in 1968 and the first allocations were started in 1970, equal to something like $3.5 billion or 100 million ounces of paper gold. Three years of the scheduled allocations would have resulted in almost 300 million ounces of paper gold, stretching the world's stock of gold by almost one third.

It is doubtful whether, in the long run, the SDR solution would have worked. As the ratio of SDR's in total reserves increased, the probability that their gold-weight guarantee would be honored, would have declined; their acceptability would then have decreased and further allocations would be denied. A long run solution required either a new world currency or an increase in the price of gold.

Unfortunately, the SDR's did not even work in the short run. The SDR's came too little and too late. The allocations might have been sufficient to stabilize the system in 1960, or possibly even in 1965. But in 1970, when the first allocations began, the path toward breakdown had already gone too far. The devalution of sterling in November 1967 brought on a gold crisis in the winter of 1968. Before 1967 there had already been some excess supply of new gold production coming from the private market. But in the fall of 1967 and the winter of 1968 private market demand for gold overtook new supplies. To maintain the market price, the gold pool (which France had already left in 1967) would have had to feed the market. The crisis climaxed in March 1968 when the Gold Communique of March 1968 resulted in the so-called (39) two-tier system which let the private market price of gold float up, while the official prise was held steady.

Meanwhile the US economy had moved into inflation with the consumer price index rising by more than 4% in 1968. In the summer of that year there was a sudden change in the policy mix. In the summer of 1968 a ten per cent income tax "surcharge" was imposed; and in the following year monetary policy was tightened; both measures contributed to the recession of 1969-1971. With the economy in recession interest rates fell, capital fled to Europe and the

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Group of Ten, and Deputy-President of the Bundesbank, asked me unofficially to prepare for him and the other Deputies a plan to save the pound sterling from devaluation. But sterling fell, in November 1967, two months before my report was due.

(39) It was called the "two-tier system" at the suggestion of Guido Carli, Governor of the Bank of Italy. It was more an act of desperation rather than a "system".

dollar became weak. From 1969 to 1971 dollar holdings rose from $2.7 billion to $11.6 billion in Germany, and from $2.6 billion to $12.7 billion in Japan. The crisis of the mark in the spring of 1971 turned into the crisis of the dollar in the following summer. On August 15, 1971 the US closed the gold window.

1.9 *Inflation Without Gold: 1972-1981*

No sooner was the exchange rate system dismantled than the monetary authorities took steps to revive it. Rather than peg their currencies to an inconvertible dollar, the European countries at first let their currencies fluctuate. The dollar dropped against currencies in Europe, even the lire, which rose from 1/620 of a dollar to 1/585 of a dollar in late August (40). Steps had already been taken in 1969 and 1970 to create a European currency (41) but they had hardly emerged beyond the drawing board stage. The inconvertibility of the dollar gave an impetus to these plans. A joint float was discussed but, for want of an acceptable pivot currency, never materialized. At the Smithsonian meeting in December 1971, the dollar was formally devalued against gold from 1/35 to 1/38 of an ounce, and some of the stronger European currencies were appreciated. President Nixon praised the conclusions as "the most important monetary agreement in the history of the world". Its major novelty was in fixing exchange rates without a gold-convertible currency.

With the divorce of the monetary system from gold, monetary discipline broke down. In February 1973 the US again devalued the

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(40) On Sunday April 15, 1971 I was in Panama, but I flew to Rome en route to Siena the next day to arrange the 1st Santa Colomba Conference (on September 4th), and on Tuesday, I visited Governor Carli at the Banca d'Italia. I suggested to him that the lire was not strong enough in the long run to appreciate against the dollar. "I realize that," he said, "but we have to let it rise for the sake of European solidarity!" The dollar did fall to 585 lire for a short time, but it soon depreciated far beyond its original IMF par value of 625.

(41) My own foray into proposals for a European currency was made in a paper delivered at the American Management Association's meetings in New York in December 1969, "The Case for a European Currency", where I outlined a plan for the "Europa". A revised version "A Plan for a European Currency", was presented at the Conference on Optimum Currency Areas in March 1970 in Madrid, reprinted in the conference volume, *The Economics of Common Currencies* edited by HARRRY JOHNSON and ALEXANDER SWOBODA.

dollar but without restraining monetary policies; the balance of payments got worse. Faced with the prospect of an increasing overhang of dollars, Europe again considered a joint float. With, however, no agreement on a pivot currency (e.g. pound or mark) and little prospect of an effective joint float without one, that possibility came to naught. In June 1973 the idea of international monetary reform was abandoned for the time being and flexible exchange rates were introduced, leaving each country to solve the inflation problem on its own.

The first oil shock came in late 1973 and created a huge shift of wealth from the industrial countries to oil exporting countries. Balance-of-payments deficits of vulnerable countries mounted and deficit countries borrowed huge amounts from the Eurodollar market. The increase in liquidity in the Eurodollar market was fed by expansive monetary policy in the US as the recession of 1974-1975 unfolded. With the inflationary recovery from that recession the dollar dropped precipitously against foreign currencies, leading to a vain attempt, organized at the end of October 1978, to solve the problem by borrowing $30 billion worth of foreign currencies. Because the inflationary monetary policy was not corrected, the loan was wasted. The European countries dumped dollars and they depreciated even more. Then the second oil shock came in 1979, boosting oil prices to $34 a barrel.

The flexible exchange rate period, from 1971 to 1980, was characterized by lax monetary discipline which spilled over to the fiscal side. With monetary discipline abandoned fiscal discipline was undermined. Government, no longer faced with the threat of a run on their exchange reserves, allowed their budgets to go into deficit, leading to more monetary expansion just to prevent interest rates on government debt from rising. But this policy was self defeating because it put an inflation premium on interest rates. Interest rates that had been below 5% in the 1960s rose to over 8%. But the price level was rising much faster so that real interest rates were negative. It was at this point that much of the third world, attracted by cheap money and inveigled by liquid bankers anxious to make loans, borrowed amounts far beyond their capacity to repay at positive real interest rates.

Meanwhile the weak dollar in the late 1970s recreated interest in European monetary integration. France and Germany found mutual interests in establishing a stable Europen monetary system which would bind more losely the interests of French farmers and German industrialists (32). Germany provided a more stable currency for the other countries than the dollar had been and it gave the more inflationry countries, such as Italy, an external discipline that had been lacking under the flexible exchange rate regime.

After the second oil price increase, when the dollar was at its lowest level ever against the mark and Swiss franc, the rate of inflation mounted to over 15%. The price of gold, which had been $179 an ounce in the summer of 1979 rose to an all-time high of $850 in January 1980.

1.10 *The Strong Dollar: 1981-1985*

A new phase in the history of the flexible exchange rate system started after Reagan became president in November 1980. The Federal Reserve, under Chairman Volcker, reversed previous policies and tightened. Interest rates in 1981 were the highest in US history. As inflation declined real interest rates rose and the economy moved into a short, but particularly deep, recession, with unemployment reaching 11%. The fall in tax revenues, combined with increased defense spending, greatly increased the huge budget deficit. The recession hit bottom toward the end of 1982, but the tax reductions that had been enacted in 1981 took effect in 1983-1984, leading to the sharpest recovery on record. The dollar had already recovered some of its lost ground in 1981, but now it soared. In 1980 it had averaged 1.39 against the ECU; in 1981, 1.12; in 1982, 0.98; in 1983, 0.89; in 1984, 0.79; in 1985, 0.76. Foreign capital had fled the dollar in the late 1970s. But now, in the 1980s, attracted both by the rising dollar and the tax cuts, capital returned. The net capital inflow more than financed the excess of expenditure over income that created the trade balance deficit.

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(42) See MARCELLO DE CECCO *(op. cit.)* for a discussion of the exchange of benefits that binds the European Community in general, and France and Germany in particular.

The US had been a creditor country ever since World War I. But high trade deficits from the 1970s on had reduced the US creditor position. The trade deficit, in successive years starting with 1977, had been $31.1 billion; $34 billion; $27.5 billion; $25.5 billion; $27.9 billion; and $36.5 billion in 1982. But in the next few years the trade deficit was $67.1 billion in 1983, $112.5 billion in 1984; $122.2 billion in 1985; $144.3 billion in 1986; $160.3 billion in 1987; and $126.3 billion in 1988. These trade deficits, amounting to $732.7 billion in six years tipped the world's largest net creditor into the position of being the world's largest debtor. The US net indebtedness has been increasing at a rate of about 3% of GNP each year. Interest payments abroad on the debt will require ever-increasing future trade surpluses.

The rising trade deficit was at first ignored because of the soaring dollar. But two factors operated in the winter of 1984-1985 to overturn the strong dollar: One was the growth slowdown, the other was an increase in the US rate of monetary expansion, both of which contributed to an excess supply of money and a falling dollar. The rate of monetary expansion had been 7% in 1984, 9.2% in 1985 and 13.4% in 1986. The dollar, which was at 250 yen and DM 3.4 at the end of February, fell to 240 yen and DM 2.5 at the time of the *Plaza Accord* designed to let the dollar depreciate in September 1985.

1.11 *The Coordinated Dollar: After 1985*

The *Plaza Accord* marked a turning point in international monetary history. No longer was it believed that flexible exchange rates would automatically arrive at a desirable equilibrium. The *Plaza Accord* represented a deliberate decision to alter the value of the dollar against major currencies. The ostensible reason for the "Baker dollar" was to pre-empt protectionist legislation in Congress, and it served that purpose. While wage rates changed only moderately, exchange rates changed a great deal, drastically lowering US real wages expressed in terms of foreign currencies. The US became much more competitive. Exports responded finally by 1988 almost recapturing the role it had lost to Germany in 1986 as the world's top exporter. The dollar however went far lower than initially expected; it reached a low point near 121 yen and DM 1.59. The great strength of the yen

and European currencies is attributable more to the fall in the price of oil in the winter of 1985-6 than to actual changes in monetary policies.

The next phase of the *coordinated dollar* started with the *Louvre Accords*. The first Louvre meeting took place in February 1987, a year and a half after the Plaza meeting. At that time it was determined that the dollar had depreciated enough and that the goal of coordinated dollar policies should be stabilization of exchange rates "around current levels." Nevertheless the dollar tended lower, raising the problem, for discussion at the Venice G7 Summit, of where the responsibility for stabilization policies lies. The use of an index number had already been suggested. It would work as follows: If, say, an index of dollar prices of a basket of commodities was rising too fast, that would indicate that the weak currency should tighten; but if that basket were falling, that would mean that the strong currencies should loosen. Debate then centered around the composition of commodities in the basket. At the IMF meetings in Washington, Secretary Baker suggested that the basket should *include gold* . But with or without gold in the basket, a promising start had been made in forming a new international monetary system based on the coordinated dollar.

In October, however, the path to reform was blocked by the stock market crash. Starting on Monday, October 13, 1987, a week before the big crash, bad news about the trade balance figures sent the market down. During a week of bad economic news, trouble in the Persian Gulf, rumors that the Secretary of Commerce wanted a lower dollar, and finally, at the close of Friday's session, an apparent conflict between Germany and the US over monetary policies, led to a steep fall in the Tokyo market on Sunday, and the great crash in New York on October 19. The Dow Jones Average, had been as low as 750 in August 1982 but had climated to a high of 2722 on August 25, 1987. That was to be its high until August 11, 1989. In the meantime the Dow Jones Average had fallen to 2500 by October; and then the crash came. It fell to an intra-day low of 1620 on Tuesday, October 20. Of course the market rebounded to hover between 1900 and 2100 soon after the crash, but the uncertainty and demoralization it created cast a pall over the market for over a year. Nevertheless by the summer of 1989 the market was heading for full recovery and new records.

The crash of 1987 crowded out thinking about reform of the international monetary system and the progress made toward the judgement index. The dollar had weakened below the *Louvre* levels and uncertainty prevailed, with some economists and the Commerce Department calling for an even lower dollar. But the second *Louvre Accord* held in December 1987 confirmed the consensus to maintain the dollar at current (lower) levels.

The weak dollar ended in 1988 after the election of President Bush. The dollar now rose strongly against both the yen and the DM. It would be desirable now to resume discussions about the appropriate index to determine where the burden of adjustment of monetary policies lie. In the longer run it would be desirable to prepare plans for a stable exchange rate system in the future, an international currency and a world central bank.

2. - The international adjustment mechanism

The study of the adjustment of the balance of payments under the gold standard or fixed exchange rates has persisted as a source of contention in economic theory. It is generally agreed that balance-of-payments surpluses and deficits would be self-correcting under a pure gold standard, but there is no general agreement on the nature of the adjustment mechanism. A country would lose gold if it had an excess supply of money, which would have its necessary counterpart, in an excess of expenditure over income of goods and securities. The gold losses, however, would set in motion forces leading to their elimination. Eventually the excess supply of money would be eliminated and the gold flow cease. Corresponding adjustments would occur in the rest of the world so that the burden of adjustment between the countries would be shared.

2.1 *The Transfer Problem*

The precise nature of the mechanism by which balances of payments are equilibrated has been a subject of continued contention. What came to be called the classical position was inferred from

Hume's pioneering essay, *Of the Balance of Trade,* in which he seems to suggest that the adjustment mechanism works through changes in relative prices between the surplus country and the rest of the world. This essay, frequently quoted, became the model for the classical analysis of the adjustment process followed by Mill, Taussig and Keynes, a view that some economists maintain to this day. But the rediscovery of demand shifts in the 1920s introduced the "modern" view that refuted the "classical" contention that changes in relative prices are required to restore equilibrium (43).

Ohlin's analysis of the transfer problem in the 1920s reintroduced expenditure effects into the analysis of the transfer problem. It was immediately apparent that these expenditure effects applied equally to the adjustment process. The proposition, that the trade balance is equal to the difference between income and expenditure, known to Gervaise and Thornton among others, was rediscovered and elaborated in the late 1940s and early 1950s (44). Combined with the idea that any trade deficit or surplus must be financed and that the financing itself has expenditure effects that affect the trade balance, it became clear that price changes were an incidental rather than essential component of the adjustment mechanism. The possibility of

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(43) I have discussed the doctrinal origins of the adjustment mechanism in a paper, complementary to this one, prepared for presentation at the 1st Mondragone International Economic Seminar, "International Economic Interdependence and Patterns of Trade Balances," Villa Mondragone, Frascati, Italy, June 19-21, 1989, and printed with the Conference Proceedings in *Rivista di Politica Economia,* September 1989. The two papers overlap in several instances.

(44) See SYDNEY S. ALEXANDER: "The Effects of a Devaluation on a Trade Balance", *IMF Staff Papers,* April 1952. Alexander argued that the relative price approach was inadequate and that the income approach was more relevant. Fritz Machlup criticized Alexander's article on grounds that both relative price and income approaches were necessary to determine the effects of a devaluation. In the sense that devaluation is itself the change in relative prices of two or more currencies, relative prices do change; but it has never been proved that relative commodity prices change following a devaluation. It is nevertheless true that in the short run, relative labor costs change with devaluation.

The relationship between income, expenditure and the trade balance was by no means unknown in the 18th, 17th and even 16th century, but it was erased from the economics of Mill, Taussig and Keynes, until it was revived by Meade, Metzler, Machlup and Alexander. See Meade's articles on the transfer problem in *Economica* (1949) and in His *Balance of Payments* (1951), and especially its Mathematical Appendix. Metzler used the relationship in a Keynesian context in his "The Transfer Problem Reconsidered", reprinted in the AEA *Reading in The Theory of International Trade* (Blakiston, 1949), and his 1951 article, *A Multiple-Region Theory of Income Transfers.*

relative price changes was never rejected by the modern school but the excess of saving over investment or a reduction in the budget deficit (increase in a budget surplus) could be altered without changes in relative prices.

The proposition attributed incorrectly (45) to the classical school, that relative price changes are needed to correct a balance-of-payments deficit, is easily refuted. Suppose that one country produces only traded goods and that the prices of these goods are governed by world prices. Now suppose this small country must make a unilateral transfer abroad. If it were true that the adjustment mechanism required changes in relative prices, this poor country could never make a transfer, or if it did, it could make it only by spending its reserves. What the so-called classical mechanism neglected were the demand shifts that would take place as a result of the changes in purchasing power of the countries involved. These expenditure effects in the example given would automatically improve the balance of trade of the paying country, and worsen the balance of trade of the receiving. This proves that relative price changes are not an essential mechanism in the balance-of-payments adjustment process (46). In this case there might be supply shifts in the rest of the world if the expenditure shifts altered the pattern of world demand (47).

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(45) I discuss this point from a different direction in Part II below, and in my Mondragone paper referred to above. See also the discussion in THOMAS M. HUMPHREY and ROBERT E. KELEHER: *The Monetary Approach to the Balance of Payments, Exchange Rates and World Inflation*, New York, Praeger, 1982. Viner himself recognizes that Ricardo, Wheatley, Bastable and Nicholson as well as Wicksell took account of direct expenditure effects. See J. VINER, *op. cit.* p. 304.

(46) After Viner's conversion to the demand shift approach he made important contributions to it. From his initial position that relative price changes were necessary he argued (what no one ever denied) that they were *possible*. Viner was, however, the first to establish that the terms of trade would not and could not change if one country were small relative to the rest of the world. He was also the first to emphasize that the effects of a transfer on the balance of payments (and therefore the flow of gold) under fixed exchanged rates, or on the exchange rate in the case of flexible exchange rates, depended critically on income velocities. No author, however, has recognized the supply-side possibility that the paying country might produce more and the receiving country less, which would be the normal assumption if leisure is not an inferior good. See my paper on the Transfer Problem in the book *Latin Debt and Adjustment*, ed. Brock and Gonzales-Vega, 1988.

(47) Viner (*op. cit.* p. 293-318) presents an excellent survey of the transfer theory literature after Mill, worth summarizing here. Mill's argument that a unilateral transfer requires a fall in the terms of trade of the paying country, creating a secondary burden,

2.2. *Domestic Goods and the Terms of Trade*

When domestic (non-traded) goods are taken into account adjust-

was attacked by C.F. Bastable, "On Some Applications of the Theory of International Trade," *Quarterly Journal of Economics*, n. 4, 1889, on the grounds that demand shifts would induce the equilibriating changes in the trade balances; subsequently J.S. Nicholson in his *Principles of Political Economy*, 1897, made the same point, acknowledging Bastable's revision of Mill's theory. Taussig, apparently unaware of the preceding contributions, in his "International Trade Under Depreciated Paper", *Quarterly Journal of Economics*, n. 31, 1917, repeated Mill's mistake, arguing that the transferring country's prices must fall relative to those of the transferee. Taussig's argument was criticized by Knut Wicksell, "International Freight and Prices", *Quarterly Journal of Economics*, n. 32, 1918, on the grounds that he ignored demand shifts which made changes in the terms of trade unnecessary. Viner, in his study of *Canada's Balance of International Indebtedness*, 1924, pp. 204-6, reviewed the Taussig-Wicksell controversy, recognized the possibility of demand shifts (attributing the ideas to Wicksell), but made the error of thinking that demand shifts would not be sufficient to effect the transfer if any of the funds were spent on domestic goods, an error Viner acnowledged eleven years later in his *Studies* (p. 396). Ohlin, taking the Wicksellian position, had already written an articlen on "The Reparations Problem," *Index*, April 1928, so when Keynes published his article in the *Economic Journal*, 1929, pessimistic about the possibilities of transfer of Germany's reparations, the Keynes-Ohlin exchange, reprinted in the AEA *Readings (loc. citc.)* occurred.

Another question, which resulted in some confusion, was the effect of the transfer on the distribution of the gold stock (or the balance of payments) and (if exchange rates are flexible) the exchange rate. Haberler argued (*Theory of International Trade*, 1936, pp. 75-76) that if reparations result in shifts of demand that raise the relative price level of the paying country gold would flow to the paying country. Viner disputed this view on the grounds that the country that spent more would require more money. In this analysis Viner (*Studies* pp. 365-4) makes an important contribution to the monetary approach to the balance of payments applied to unilateral transfers. Gold will flow from the paying country to the receiving country if the transfer creates an excess demand for money in the latter and an excess supply of money in the former, a result which depends on whether income or expenditure velocity of money is assumed to be constant. (See *supra*, f. 46) Generally neglected in the controversy was the fact that the existence of the transfer itself created additional transactions and therefore a global increase in the excess demand for gold, creating deflationary pressure in the world as a whole.

Viner's theory, that gold would flow to the receiving country, was criticized by D.H. Robertson in his review article of Viner's book in 1937, to which Viner wrote a rejoinder. The movement of gold depends on how the transfer affects the relative demand for money in the two countries. Viner assumes that the demand for money depends on expenditure (what he calls "final purchases") but Robertson argued that it depends on production or income. A more sophisticated analysis would split the components of the demand foir money into those held by business, households and governments. Then it could be shown that under the assumptions of the analysis, where national income remains constant in the two countries, that business demands for money in the two countries would not change, whereas household demands would increase in the receiving countries and decrease in the paying country, confirming, in this case, Viner's conclusion. Gold would therefore flow to the receiving countries under the gold standard; and under flexible exchange rates with constant money supplies in each country, the currency of the paying country would depreciate.

ment to disequilibrium may require a change in relative prices (48). A consistent model in which a transfer worsens the terms of trade of the transferring country has been produced by John Chipman in his paper for the Joan Robinson *Memorial.* If both countries produce only exportable goods and domestic goods, then a transfer which increases the demand for domestic goods in the receiving country, and decreases the demand for domestic goods in the paying country, will result in resource shifts out of export goods in the receiving country, and into export goods in the paying country, resulting in change in the terms of trade even in the case of constant costs, and Professor Chipman believes it vindicates Mill's theory of the secondary burden from the transfer.

Chipman's example, however, is only a special case that shows Mill's result is a possibility, not a necessity as Mill thought. Even under Chipman's assumption, the terms of trade can change in the opposite direction. If the expenditure shifts result, at constant prices, in an increased demand for the goods of the paying country, it is possible that the increased supply in the paying country will be insufficient to offset the increased demand and the terms of trade of the paying country will improve; there is, however, a presumption in the Mill-Chipman direction because with neutral tastes (income effects on imported goods cancelling) the terms of trade of the paying country would worsen because of the supply effects. But the *possibility* of a shift in the terms of trade in that direction has never been doubted.

When the Mill-Chipman model is generalized to the case of incomplete specialization, both countries producing both traded goods as well as domestic goods, the conclusions do not stand up. This

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(48) The case of domestic goods was known to all economists who accepted the "law of one price" in its application to transportable commodities, including David Hume, and as Viner notes, Ricardo. Mountifort Longfield in particular stressed the harm from absentee landlords to the Ireland, in terms of the loss of employment arising out of the reduction in the landlords' consumption in Ireland. See WILL MASON: "Some Neglected Contributions to the Theory of International Transfers", *Journal of Political Economy,* December 1955, pp. 529-35. Taussig *(loc. cit.)* laid great emphasis on domestic commodities as did Keynes in the *Treatise.* The model with domestic goods forms an important part of the analysis in ROLAND WILSON'S *Capital Imports and the Terms of Trade,* 1931. See Viner's *Studies,* pp. 323-6 for a discussion of the literature up to 1937.

is because the shift of resources in the paying country may go into the importing-competing goods industry; and/or the shift of resources in the receiving country may be from the import-competing goods industry, both supply effects working against the Mill-Chipman conclusion. If only one of the countries, a large country, produces all goods at constant costs, the transfer obviously cannot alter the terms of trade. Chipman's interesting special case only illustrates a special set of conditions under which Mill's conclusion would hold up, one of many possibilities.

2.3. *The Relative Price of Domestic Goods and International Goods*

If there is incomplete specialization in the two countries, the change in relative prices of domestic and international goods will depend on the conditions of production. The initial effect of the increase in demand for domestic goods in the payee, and decrease in the payer, will be a rise in prices of domestic goods in the former and a decline in prices of domestic goods in the latter. A shift of resources will then take place in both countries-to the domestic-goods industries in the payee and into the international-goods industries in the payer. Production of domestic goods will increase in the payee and production of domestic goods will decrease in the payer. In the new equilibrium, after supply adjustments have taken place, the change in the relative prices of domestic and international goods will depend on three possible supply configurations: *a)* increasing opportunity costs; *b)* constant opportunity costs; and *c)* decreasing opportunity costs.

In the case of *a)* the prices of domestic goods relative to international goods will, for the duration of the transfer, be higher in the payee and lower in the payer. In the case of *b)* the relative prices of domestic and international goods would be unchanged. And in the case of *c)* the relative prices of domestic goods will fall in the payee and rise in the payer. Thus we arrive at the conclusion that the initial effect where domestic goods prices rise in the payee and fall in the payer may be sustained or altered in the final equilibrium depending upon supply conditions.

More can be said, however, if we specify the production func-

tions that determine the conditions of supply. Suppose there are two factors of production, labor and capital, two countries, *A* and *B* and three goods, *x*, *y* and *z*. The goods *x* and *y* are assumed to be exported by *A* and *B* respectively and the good *z* is the domestic good produced and consumed in both countries. We assume constant returns to scale, the same technology in the two countries, but different factor endowments.

Under these conditions factor prices will be equalized provided that factor endowments are not so different that specialization occurs. Now if country *A* makes a transfer to country *b* there will be an increase in demand for *x*, *y* and *z* in *B* and a decrease in demand for the same goods in *A*, assuming the absence of inferior goods. Let us assume that tastes in both countries, at the margin, are the same in order to isolate supply effects. Then it can be shown, perhaps surprisingly, that the relative prices of the three goods will be unchanged. Even though country *B* increases, and country *A* decreases its output of the domestic good *z*, they can be produced at constant opportunity costs because the mix of export and import goods can be altered in each country. Factor prices were equalized before and are equalized after the transfer and are, moreover, unchanged, because of our assumption that income effects cancel, placing no alterations on the global demands for resources.

Now let us relax our assumption that the transfer creates no net change in demand. Provided that there is no specialization before or after the transfer, so that each country produces, besides domestic goods, both export and import-competing goods, the effect of the transfer on the terms of trade and the relative prices of domestic and international goods can be deduced by determining the change in relative factor prices, by summing the net change in demand for the productive factors. Supply of goods implies corresponding demand for the factors to produce them. Wages will rise or fall relative to rents of capital according to whether there is an excess demand or supply of the factor labor at constant commodity and factor prices. The terms of trade of the country exporting the labor-intensive good will rise or fall according to whether labor requirements are increased or decreased as a result of the redistribution of demand arising from the transfer. In which direction the terms of trade will change depends on the

interplay of the ratios of factor intensities and the propensities to consume; there is no presumption in one direction or another.

2.4 *Banking Systems*

The growth of commercial banking created alternative means of payment that, in theory, would have the effect of accelerating the process of adjustment. If the ratio of gold behind the money supply (including bank deposits) were a constant, then every ounce of gold leaving or arriving would decrease or increase the money supply by a factor equal to the reciprocal of the reserve ratio. The speed of adjustment would thereby be correspondingly increased.

The introduction of central banking also affected the speed of adjustment. In the specie standards of the 17th centuries no country had a central bank (49), but by the late 19th century most countries had at least a semi-public institution that performed central banking functions (50); the US was a major exception. Most central bank notes, as already noted, were convertible into gold. Central banks' reserve ratios would vary between countries but were unlikely to be as high as one. A loss of a penny of gold might force a reduction of two pennies in bank notes and 10 or 20 pennies in the money supply, depending on the reserve ratio.

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(49) With the possible exceptions of the Bank of St. George of Genoa (founded in 1407); the Banco di Rialto (1587); the Bank of Amsterdam (1609); Bank of Hamburg (1619); Banco del Giro or Bank of Venice (1619). The Bank of Sweden, founded in 1656, may have been the first (in 1658) to issue bearer notes. European banking, however, was born in Italy and banking institutions in some of the independent Italian states performed some central banking functions.

(50) While the Bank of Sweden may have issued the first bank-notes payable to the bearer on sight in 1658 it did not become the Riks bank until 1688. The Bank of England was founded in 1694. The Bank of France, founded in 1800 as a private company, virtually became a state bank on April 14, 1803, when it was given a monopoly of note issue in Paris, a right extended to all of France during the revolution of 1848 when gold payments were suspended and its notes became legal tender. The Imperial Bank of Germany was founded in 1875 when the Bank of Prussia was merged in the Imperial Bank. The Bank of Naples, said to be the oldest bank of issue in Italy, was created in 1796 as a result of a fusion of seven pawn banks, founded in the 16th century as a protest against usury (See *European Currency and Finance*, p. 351). At the time of the unification of Italy six banks had the right of note issue; after the reorganization of the banking system in 1893, only the new Bank of Italy, the Bank of Naples and the Bank of Sicily had the right of note issue; by 1914 over two thirds of the note outstanding were issued by the Bank of Italy.

Increasingly in the later nineteenth century the central banks acted to slow the adjustment mechanism, indicating that reserve ratios were below optimum. When gold left, the central bank would often blunt its effect on monetary reserves by making loans, often increasing banknotes. The central bank exercised discretion over its banking policy reacting differently to a loss of gold in the inland market and a gold loss from abroad. The monetary authorities in a country could alter the speed of adjustment even under an automatic system by requiring the banks to hold a larger reserve ratio. A larger reserve ratio would shift some of the burden of adjustment onto the countries who, squeezed for reserves, had to adjust quickly. The optimum reserve banking ratio for a country would be determined by the advantages and disadvantages of alternative speeds of adjustment. A high reserve ratio gave a country greater financial power.

The declining ratio of gold to GNP was one of the factors that encouraged increasing centralization of gold in central banks, and created difficulties for adjustment at a time when monetary contraction came to mean depression.

The gold standard could probably not have worked smoothly without a high degree of capital mobility, which enabled a country to optimize the speed of adjustment and achieve a better pattern of intertemporal expenditures.

2.5 *The Alleged Mercantilist Fallacy*

The mercantilists argued in favor of policies that, so they thought, would generate a balance-of-trade surplus and thus provide for a regular increase in the quantity of money. They reasoned that a country with no gold or silver mines would have to import its money from abroad, which could only be achieved by a balance-of-payments surplus, which, apart from capital movements, required an excess of exports over imports.

It is probably not true, as the classical economists later claimed, that the mercantilists confused wealth with gold, although their language sometimes gave that impression (51). On the contrary the

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(51) Clement Armstrong, in 1530, writes: «The holl welthe of the reame is for all our riche commodities to gete owt of all other reamys therefore redy money; and after

economists in the infancy of economic theory, from Mun, Petty, North, and Locke in the 17th century through Gervaise, Cantillon, Hume and Steuart, had fairly sophisticated ideas of wealth. It is hard to find any serious economic writer during the century and a half before Adam Smith who believed that wealth consisted only of gold. Indeed the catalogues of wealth in England and elsewhere, from the *Domesday Book* to the work of Gregory King, all took account of physical capital in wealth, and frequently wanted to use that as the basis of tax-paying capacity. Although they did not confuse wealth with gold or silver, they did believe that an increase in wealth required an increase in the quantity of money to finance an expansion of trade and, in a world where money consisted mainly of gold and silver, that required an export surplus. The views of many of the mercantilists were not much different from the views of many economists today.

It is true that there were mercantilists who advocated artificial policies to increase the quantity of money. This was especially true during the great depression of the 1620s, associated with the Thirty-Years' War in Germany. There were arguments for tariffs, import restrictions and devaluation as means to increase the quantity of money and to promote activity. Toward the end of the 17th century there were arguments for devaluation in connection with the Great

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the money is brought in to the holl reame, so shall all peple in the reame be made riche therewith». In «A Treatise Concerning the Staple and the Commodities of this Realme», quoted in *Palgrave's Dictionary*, vol. I, p. 86. In this and later centuries mercantilist policy was devoted to the pursuit of national *power*. Unlike the classical economists', the mercantilist arguments were not based on a static economy. Growth and prosperity both required an increase in the money supply and saw a growth of the money supply as an indication of prosperity, not the thing itself. To the classical objection that an increase in the money supply would cause inflation and worsen the balance of payments, a good mercantilist could have answered: «Not if the influx of money is a reflection of saving and people want to hold the additional money». To that the classical economist would answer: «Gold and silver are barren! It is wasteful to tie up wealth in the form of money». But our intelligent mercantilist would reply: «No. It represents a claim on foreign commodities, like a war chest, that will help make our troops victorious in time of war and our people well-fed in times of famine». And when the classical economist responds, rather lamely: «The only true source of wealth is productive capital» the good mercantilist would say: «If money is not itself a form of productive capital it raises the profits from productive capital by being available to take advantage of opportunities. We know that we cannot clothe ourselves in silver and eat our gold, but it is an instrument by means of which our prosperity will be measured. Gold, it is true, is only a means to other things, but the sensible nation, jealous of its power and alert to its opportunities, will not fail to keep a national reserve of gold, and encourage its citizens to hold gold too which our state can then draw upon if need be».

Recoinage, by Loundes and Newton on the one side, advocating devaluation, and Locke on the other side rejecting it (52). But the object of expanding the quantity of money through an export surplus was not incorrect, nor inconsistent with the classical system, in a growing world economy.

The mercantilists were not in error in wanting an increase in the quantity of money; this was necessary in a growing economy. Those advocates of a trade surplus were not greatly different from those advocates of an improved balance of trade today. The classical economists would have said that each country will get its natural level of specie. If they had considered, they would probably have said that a growing economy will naturally attract a rising quantity of specie. But mercantilist thinking came into being most exuberantly in the first part of the 17th century, when rapid monetary expansion associated with silver production was subsiding and depression had set in. The depression of the early 1620s, the heyday of mercantilism, was not unlike in many respects the depression of the 1930s, which brought about a revival of mercantilism with Keynes. The world monetary shortage, combined with the war in Germany, put pressure on every country to resist deflation, and the only way to do so in a single country was to prevent balance-of-payments deficits. Protectionist remedies may have been distorting in the long run, but in the short run they might have mitigated the unemployment.

The classical model rejected the mercantilist notion that tariffs or other trade restrictions would improve the balance of trade or payments. They argued that any temporary gold inflow that resulted would produce counterproductive inflationary effects offsetting the initial gain. A sophisticated classical economist would have acknowledged that a tariff would raise the domestic price level and thus lower real wages, but he would have insisted that this was merely temporary; in the long run real wages are determined by subsistence, and the fall in real wages would have reduced the population until equilibrium was restored. This measure of course works out only in the long, long run, whereas the mercantilists were interested in short

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(52) Newton changed his mind later and when the question came up again in 1717 he objected to altering the price of silver on the grounds that silver was the "standard."

run remedies for short run problems. A more alert classical economist would have said that the tariff increases the price level, but this is a once-for-all effect that will bring about only a once-for-all increase in specie. The balance of payments advantage will therefore be very short-lived. As Hume took pains to argue, the benefit to industry of an increase in the price level lies only in the transition from one price level to another. After the new price level has been reached the economy is no better off than before, and would be saddled with the misallocative effect of the tariff.

The classical school also rejected the notion that exchange rate changes would alter the balance of payments, for the same reason. Devaluation, according to the early classical school, meant a decrease in the gold content of the currency (an increase in the currency price of gold), an increase in the number of units into which a given weight of gold or silver was divided. The price level would rise in proportion to the devaluation. Whether a pound of silver was divided into ten, fifty or a hundred parts would not change the price level in terms of a given weight of metal. If the name of a currency, say a shilling, now represented a smaller quantity of silver, its value would go down proportionately, and the price of commodities in that unit would rise proportionately.

The situation is not fundamentally different for an inconvertible paper currency. If the number of units of paper were increased the price level would rise in proportion, as under a metallic currency, provided that no further issues were expected. In the case of paper currencies, the classical school would say that depreciation of a currency can only arise from monetary expansion and the consequent depreciation of the nominal exchange rate would not alter the real exchange rate (53). The classical objection to paper currencies, however, is that the temptation to increase paper currency to finance government expenditures is so great that the public would expect further emissions of currency and lose confidence in it, fleeing the currency for goods; the velocity of circulation would increase and aggravate the inflationary movement.

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(53) «...the depreciation of the currency does not affect the foreign trade of a country: this is carried on precisely as if the currency maintained its value». See JOHN STUART MILL, *Principles of Political Economy*, London, Ashley Edition, 1909, p. 635.

The classical model stressed the equilibrium mechanism in a static framework but it can be adapted to a growing world economy. We shall consider this in some detail later, but the basic ideas are simple enough. If, under the gold standard, growth takes place unevenly between countries, there will be an increasing demand for money, financed by savings, that will automatically leave room for an export surplus and an increase in the quantity of money. If every country were growing, each country would strive for an export surplus to finance the concomitant increase in the supply of money. The question then arises: can each country achieve an excess of exports over imports at the same time? The answer is that it can if global monetary reserves are increasing. The excess of exports over imports in the world as a whole is equal to the increase in monetary gold reserves (54). If the demand for gold-money is a given proportion of income, then the required balance-of-payments surplus as a proportion of national income would be the growth rate of income multiplied by the ratio of gold to the money supply (the reserve ratio) and divided by the income velocity of money (55).

2.6. *More on the Classical Doctrine*

The price-specie-flow mechanism of international adjustment *attributed* to the classical economists implied adjustment based on "inflation" in the surplus countries and "deflation" in the deficit countries. This model, however, was at variance with the real world of the gold standard. Instead of some countries inflating while others

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(54) World exports equal world imports if there are no asymmetries in the recording of items; net gold exports must equal net commodity (non-gold) imports. But if (as is the practice) gold exports from gold-producing countries are counted "above the line" as ordinary commodity exports, while monetary gold changes in other countries are listed "below the line", an asymmetry is introduced that gives rise to the statement in the text. It is easier to divide gold into two commodities: commercial gold and monetary gold. Net monetary gold imports equal net commodity exports including commercial gold. See PAOL HOST-MADSEN: "Asymmetries Between Balance of Payments Surpluses and Deficits", *International Monetary Fund Staff Paper*, n. 9, 1962, pp. 182-99.

(55) Let $G = aM$, where G represents gold, M the money supply, and A the gold/money reserve ratio, assumed to be constant. Let income velocity be $V = PY/M$ where PY denotes money income. Then the balance of payments ratio to money income is $(dG/dt)) / PY = an/V$, where n is the rate of growth of money income.

were deflating most countries experienced inflation and deflation together. The gold standard was a currency area in which the member countries experienced the same monetary phenomena.

Recent studies, however, suggest that the price-specie-flow mechanism did not reflect the mainstream thinking of the classical economists.

The Cunliffe Committee *Report* in 1918 contained an explicit and influential description of the adjustment process that prevailed under the pre-1914 gold standard according to perceptions of it in the early decades of the twentieth century. Following a discussion of the adjustment of the discount rate and capital movements in the face of seasonal disturbances, the report discusses the core of the adjustment process for durable disturbances (56): «If the adverse condition of the exchanges was due not merely to seasonal fluctuations, but to circumstances tending to create a permanently adverse trade balance, it is obvious that the procedure above described would not have been sufficient. It would have resulted in the creation of a volume of short-dated indebtedness to foreign countries which would have been in the end disastrous to our credit and the position of London as the financial centre of the world. But the raising of the Bank's discount rate and the steps taken to make it effective in the market necessarily led to a general rise of interest rates and a redistriction of credit. New enterprises were therefore postponed and the demand for constructional materials and other capital goods was lessened. The consequent slackening of employment also diminished the demand for consumable goods, while holders of stocks of commodities carried largely with borrowed money, being confronted with an increase of interest charges, if not with actual difficulty in renewing loans, and with the prospect of falling prices, tended to press their goods on a weak market. The result was a decline in general prices in the home market which, by checking imports and stimulating exports, corrected the adverse trade balance which was the primary cause of the difficulty».

This statement was astonishing in that it treated the trade balance as a datum, perhaps for the first time, and not as a variable. What in

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(56) «The Committee on Currency and Foreign Exchanges After the War», *First Interim Report*, London, 1918.

heaven's name is a *"permanently adverse" trade balance?* Trade balance deficits can exist only so long as they are financed, and when the financing stops so does the deficit. If Britain had a lower income because of sales of British investments during the war, there would no longer be a source of finance for the excess of expenditure over income that the trade balance implies. Britain's problem was her reduced income, not her trade balance.

The *Cunliffe Report* neglects the demand-shift expenditure effects arising out of altered sources of finance. A trade balance deficit cannot exist independently of the method by which it is financed. A trade balance cannot be adverse without an excess of domestic expenditure over income and this cannot be maintained without inward income transfers, international borrowing, or the sale of domestic reserves.

The *Cunliffe Report* draws on a mistake in the Mill-Taussig analysis later pursued by Keynes in his transfer controversy with Ohlin and Rueff in the *Economic Journal* in 1929. The *locus classicus* of the error is a passage in John Stuart Mill's *Principles of Political Economy*. After discussing the process of equilibrium of exchange rates in the absence of transfers, correctly based on changes in relative prices, Mill proceeds to: «. . . . . point out in what manner and degree the preceding conclusions are affected by the existence of international payments not originating in commerce, and for which no equivalent in either money or commodities is expected or received; such as a tribute, or remittances of rent to absentee landlords, or of interest to foreign creditors, or a government expenditure abroad, such as England incurs in the management of some of her colonial dependencies.

To begin with the case of barter. The supposed annual remittances being made in commodities, and being exports for which there is to be no return, it is no longer requisite that the imports and exports should pay for one another: on the contrary, there must be an annual excess of exports over imports, equal to the value of the remittance. If, before the country became liable to the annual payment, foreign commerce was in its natural state of equilibrium, it will now be necessary for the purpose of effecting the remittance, that foreign countries should be induced to take a greater quantity of exports than before: which can only be done by offering those exports on cheaper

terms, or, in other words, by paying dearer for foreign commodities. The international values will so adjust themselves that either by greater exports, or smaller imports, or both, the requisite excess on the side of exports will be brought about; and this excess will become a permanent state. The result is that a country which makes regular payments to foreign countries, besides losing what it pays, loses also something more, by the less advantageous terms on which it is forced to exchange its productions for foreign commodities.

The same results follow on the supposition of money. Commerce being supposed to be in a state of equilibrium when the obligatory remittances begin, the first remittance is necessarily made in money. This lowers prices in the remitting country, and raises them in the receiving. The natural effect is that more commodities are exported than before, and fewer imported, and that, on the score of commerce alone, a balance of money will be constantly due from the receiving to the paying country. When the debt thus annually due to the tributary country becomes equal to the annual tribute or other regular payment due from it, no further transmission of money takes place; the equilibrium of exports and imports will no longer exist, but that of payments will; the exchange will be at par, the two debts will be set off against one another, and the tribute or remittance will be virtually paid in goods. The result to the interest of the two countries will be as already pointed out: the paying country will give a higher price for all that it buys from the receiving country, while the latter, besides receiving the tribute, obtains the exportable produce of the tributary country at a lower price».

Mill's doctrine that a unilateral transfer required a deterioration in the terms of trade was distinctly unclassical, having its earlier roots in Thornton and Malthus, and, by one interpretation, Hume.

It is remarkable that the later classical economists, Mill, Marshall, Taussig and Keynes (in his classical phase) neglected the direct effects of expenditure changes on the trade balance, whereas some of the earlier economists understood it. Taussig was guilty of perpetuating the error and influencing a whole generation of economists. His argument proceeds as follows, after an: «.....increase in remittances from London to New York..... specie will flow from London to New York. Then will follow that train of consequences familiar to the

reader of Ricardo and Mill. Prices will fall in Great Britain and will rise in the United States. With the fall of English prices the export of commodities from England will be stimulated, and more of them will go to the United States. With the rise of American prices exports from he United States will be discouraged, and imports correspondingly stimulated».

He then goes on to say that the improvement of the British balance of trade will equal the new remittances.

Taussig erred in attributing to Ricardo «that chain of consequences familiar to the reader of Ricardo and Mill». Taussig's pupil, Viner, recognized that Ricardo does not fit in that group. But if we leave out Ricardo, we are left only with Mill of the real classical economists.

More important, however, is that Taussig, like others with the same views, ignores Walras' Law; his is a single-entry bookkeeping view of the economy (unless one attributes to him an implicit assumption that all income effects are zero). Nowhere is there an account of the factors that financed the remittances in the first place nor of the expenditure effects the shifts in purchasing power produce.

Every gold inflow has a counterpart inside the economy in the form of a corresponding excess supply. A balance-of-trade surplus combined with a gold inflow does not constitute disequilibrium if the demand for money is growing because of, say, growth in the economy. It was the omission of the counterpart to the transfers that led to a tortuous theory of adjustment under fixed exchange rates. It was a theoretical error that led Keynes and others to believe that adjustment required changes in price levels and would therefore be achieved better by changes in exchange rates.

Viner is not unaware of the uncomfortable position of this school: «From Hume on, there was general agreement that some or all types of disturbances in international balances would result in changes in the terms of trade, and that these changes would contribute to a restoration of equilibrium. As has been shown, Hume held that a relative change in the quantity of money in one country as compared to other countries would result in a rise in the prices of its products relative to the prices of foreign products, until, as a result of the influence of this relative change in prices on the course of trade and

the flow of specie, the "level of money" had again been equalized internationally. This was almost universally accepted doctrine during the next century. Thornton and Malthus claimed, with Wheatley and Ricardo dissenting, that a similar change in relative prices would occur and would operate to restore equilibrium in the balance of payments when it had been disturbed by a crop failure or the remittance of a subsidy, and this also came to receive the erroneous designation of the "Ricardian theory"».

Mill's view, which Viner also attributes to Hume, was not representative of the classical economists. First, there is room for an interpretation of Hume that suggests he was not guilty of the error made by Mill. Hume believed in the law of one price, notwithstanding his famous "miracles" — really controlled experiments — whereby four-fifths of the money of Great Britain are annihilated or multiplied overnight.

Second, several important writers before Mill, including John Leslie Foster John Wheatley, David Ricrdo, Mountifort Longfield, Thomas Joplin, Robert Torrens and Peter (Lord) King (57) took into account direct shifts of demand without changes in relative prices. Viner himself has noted besides several of the above, Cairnes, Bastable and Nicholson. What was called in Viner's day the "modern view" which incorporated demand shifts, seems to have been held by most of the classical economists with the exception of John Stuart Mill.

Third, Viner's claim that the "classical view" was still the "predominant" view was just in the process of crumbling when Viner was writing, as a result of the developments by Ohlin, Wilson, Pigou,

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(57) See JOHN LESLIE FOSTER: *An Essay on the Principle of Commercial Exchanges and More Particularly of Exchange Between Great Britain and Ireland*, London, Hatchard, 1804, p. 24; JOHN WHEATELY: *An Essay on the Theory of Money*, vol. I, 1807, esp. p. 238; DAVID RICARDO: *High Price of Bullion*, appendix; MOUNTIFORT LONGFIELD: *Three Lectures on Commerce and One on Absenteeism*, Dublin, Milliken, 1835, pp. 76-9; LORD KING, *Thoughts on the Effects of the Bank Restrictions* (2nd edition), London, Cadell & Davies, 1804; THOMAS JOPLIN, *Currency Reform: Improvement and Depreciation*, 1844, pp. 14-15; Colonel ROBERT TORRENS: *The Budget*, London, Smith, Elder, 1844, p. 144. Will Mason discusses also in the same connection the contributions of William Joseph Stourton (1776-1846), Thomas Chalmers (1780-1847); Mason's survey builds on Viner, *loc. cit.*, pp. 293-311, but reaches a different conclusion with respect to the classical view: «Consideration of the neglected contributions to international transfer theory thus reveals that nineteenth century thought was more modern than modern critics have realized». (*loc. cit.*, p. 535).

Robertson and Viner himself. Subsequent literature includes the work of Haberler, Meade, Samuelson, Johnson, myself and others (58).

Fourth, empirical studies have tended to refute the notion that under a fixed rate system like the gold standard prices in countries moved in opposite direction. On the contrary, the economies that adhered to the gold standard tended to experience inflation and deflation simultaneously according to the state of the international business cycle or the trends in world gold production. The studies carried out by students of Taussig, including Viner, indicated that even when price changes did occur in the direction suggested — against the transferring country — the extent of the price changes were much too small to account for the very rapid adjustment of the trade balance to capital imports or unilateral transfers.

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(58) Professor Samuelson reviewed the issues and developed a criterion based on the slopes of the Engels' curves (ratios of marginal propensities to consume and import) that was valid (for determining changes in the terms of trade) even when domestic goods are taken into account; it is valid for the case of fixed production. See P. A. SAMUELSON: "The Transfer Problem and Transport Costs: I. The Terms of Trade When Impediments are Absent", *Economic Journal*, n. 57, June 1952, pp. 278-304; "The Terms of Trade and Transport Costs: II. Analysis of the Effects of Trade Impediments", *Economic Journal*, n. 59, June 1954, pp. 264-90. In "The Transfer Problem: A Note on Criteria for Changes in the Terms of Trade", *Economica*, May 1955, pp. 113-21; HARRY JOHNSON generalized and simplified somewhat Samuelson's treatment of transport costs; and in "The Transfer Problem and Exchange Stability," *Journal of Political Economy*, n. 64, June 1956, pp. 212-25 he attempted (unsuccessfully in my opinion) to equate the "transfer problem", defined to exclude the budgetary problem, to the problem of exchange stability. In my "Transport Costs in International Trade Theory," *Canadian Journal of Economics and Political Science*, n. 23, August 1957, pp. 331-48 I introduced the geometry of transport costs into the literature of international trade theory (by modifying the offer curves) and applied that technique to the transfer problem; in "International Trade and Factor Mobility," *American Economic Review*, n. 47, June 1957, pp. 321-35, I analyzed the relation between factor mobility and commodity mobility in a factor proportions model and showed how capital movements affect the relation between income and expenditure (and the trade balance and the current account) through the transfer of the marginal product of the capital imported abroad in the form of interest payments; in *The Pure Theory of International Trade*, (loc. cit.), I analyzed the transfer problem as one of a series of disturbances to equilibrium to derive the Meade criterion and to demonstrate the effects of a transfer on real income, taking into account any secondary burden (or benefit!), showing that the transferring country's income must always worsen if the exchange market were stable, an implication that Samuelson had already deduced from his discussion of the Leontief model in the Taussig *Festschrift*. Subsequent to my analysis, part of which I generalized to the multiple-country multiple-commodity case, Jagdish Bhagwati and Graciela Chichilinsky have argued that the paying country might gain by a transfer if a third country were made sufficiently worse off by it, a possibility consistent with stability.

2.7 *The Ohlin-Mead Criterion*

The literature reached a high point, for the case of the two-country two-commodity non-monetary model, with the contributions of J.E. Meade (59). His formula for the criterion for changes in the terms of trade generalizes the preceding literature:

$$dP / dT_{ab} = (1 - m_a - m_b) / (n_a + n_b - 1)\, I$$

where: P is the terms of trade of country B; T_{ab} is a transfer from A to B; m_a and m_b are the marginal import propensities in A and B; n_a and n_b are the elasticities of demand for imports in A and B as a function of the terms of trade; I is the initial level of imports and exports, assumed to be in balance.

Meade's criterion for the first time expicitly generalized the two-country, two-commodity model to take into account both demand and supply. The Ohlin-type expenditure effects are involved in the numerator, and show that the transfer creates an excess supply, equilibrium or an excess demand for the goods of the transferor depending on whether the sum of the marginal propensities to import is less than, equal to or greater than unity. But because supply effects have not been considered this does not yet determine the change in the terms of trade. The elasticities of demand for imports incorporate both supply and demand effects (60). The elasticities of demand for imports are weighted averages of the elasticities of demand and supply (within A or B) of the imported commodity. Thus in the case of constant costs where one country is completely specialized there will be no change in the terms of trade even if the expenditure shifts would otherwise suggest one.

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(59) See JAMES E. MEADE: *The Balance of Payments*, London, 1952 and especially its Mathematical Supplement. See also Meade's discussion of the transfer problem in *A Geometry of International Trade*, London, 1951.

(60) Meade's elasticities are derived from his "trade-indifference curves" which incorporate movements along consumption indifference and production transformation curves. For example, the elasticity of demand for imports in any country can be expressed as a weighted sum of elasticities of demand and supply for the product, the weights being the quantity consumed and the quantity produced respectively. For a further discussion see my "The Pure Theory of International Trade", *American Economic Review*, n. 47, March 1960, pp. 67-110, reprinted in *International Economics* (loc. cit.).

The importance of the Ohlin-Meade contributions were to demonstrate that relative price changes were not an inherent part of the adjustment process, as Mill, Marshall, Taussig and Keynes believed. The work of these four economists has been characterized as the classical approach to the transfer problem. But a more detailed examination of the doctrines of the earlier economists, including, Gervaise, Cantillon, Hume, Ricardo, Wheatly, Foster, Longfield, Bastable and Nicholson shows that the true classical position was much closer to the Ohlin-Meade view than to the view of the Mill-Taussig school.

3. - What the Classical Adjustment Mechanism Really Was

The basic features of the mechanism of adjustment of the small open economy, as conceived by the mainstream eighteenth and early nineteent century economists, was based on three propositions: 1) the money supply increases when there is a balance-of-payments surplus and decreases when there is a balance-of-payments deficit; 2) money expenditure increases or decreases when the money supply increases or decreases; and 3) increases or decreases in expenditure respectively worsen and improve the balance of payments. These economists believed in the quantity theory of money applied to the world economy, a closed economy, but did not apply it to an open economy with a convertible currency; they believed that the existing quantity of money would be distributed around the world in proportion to its demand, which, they assumed, was based on income and population. The main issue that came to divide economists in the next century or so was the question of whether changes in relative prices were a *sine qua non* of the adjustment mechanism or merely incidental factors.

3.1 *The Monetary Approach*

To understand the basic issues it will be convenient to develop a classical model in which we shall abstract from all unemployment affects. The analysis starts with the Quantity Theory of Money applied to the world economy. Let M denote the world money supply and P

the price level expressed in a given currency, say a particular gold coin. Now the demand for money in a particular country, i, is assumed to be a proportional function of national output in i, y_i, and the price level in i, P_i. Thus:

$$L_i = K_i P_i Y_i \qquad i = 1, 2, \ldots\ldots n \tag{1}$$

represents the demand for money in one of the n countries. We have the law of one price, however, that states that all prices levels are the same so that:

$$P_1 = P_2 = \ldots\ldots = P_n = P. \tag{2}$$

Then we can write the world demand for money as follows:

$$L = (K_1 Y_1 + K_2 Y_2 + \ldots\ldots k_n Y_n)P \tag{3}$$

which must in equilibrium be equal to the stock of money. The supply of money in the world as a whole is determined exogenously (by conditions of gold and silver production):

$$M = M(t). \tag{4}$$

Now we equate *(3)* and *(4)* to get the conditions for monetary equilibrium:

$$M(t) = \Sigma K_i Y_i P \tag{5}$$

and solve for the world price level in equilibrium:

$$P_o = M(t) / \Sigma K_i Y_i \tag{6}$$

Once the world price level is determined the equilibrium quantity of money in a particular country can be found by solving the equation:

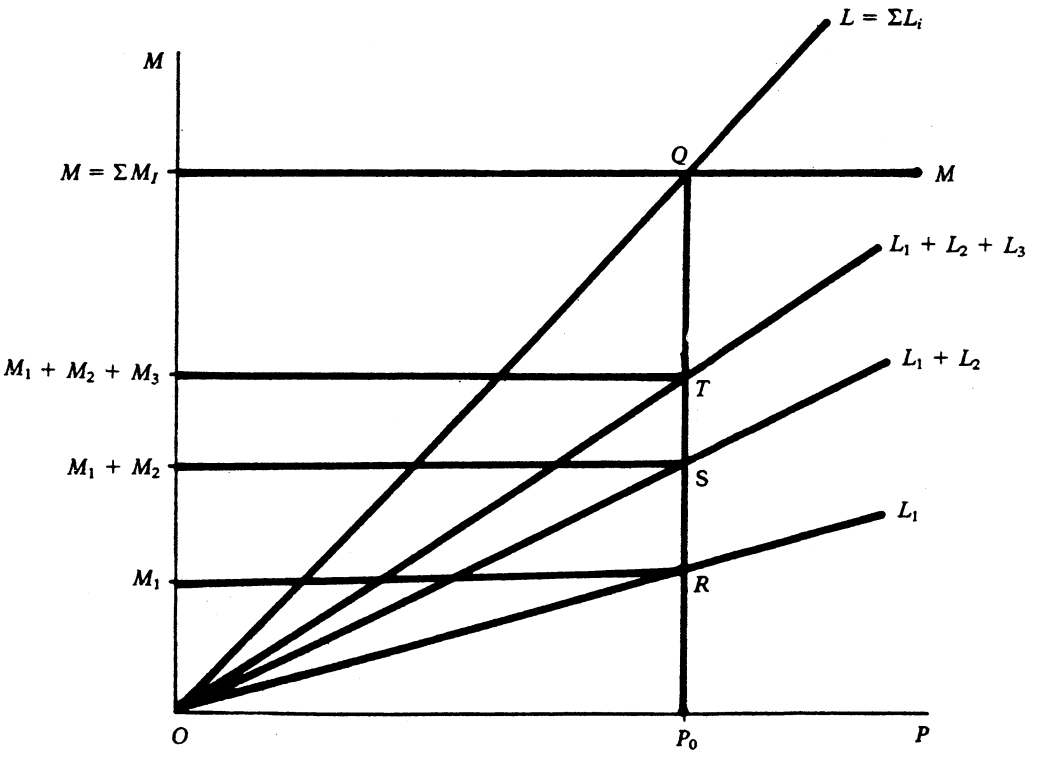
$$M_i = K_i Y_i P_o. \tag{7}$$

The Petty-North-Locke-Gervaise-Cantillon-Hume-Smith theory that is usually referred to as "Ricardo's theorem on the distribution of the precious metals" is implicit in equation *(7)*, in combination with the equations for the world demand and supply of money. Money is distributed around the world in proportion to demand, which depends on income and population. In the above we have used national income PY_i instead of per capita income and population.

The propositions are illustrated in Graph 1. The price level is plotted on the abscissa and the money supply on the ordinate. The given stock of money in the world as a whole is fixed (at the moment) at M_o. The demand for money in country 1 is indicated by the line L_1, that of two countries by $L_1 + L_2$, and so on, with $L = \Sigma L_i$ the demand

GRAPH 1

THE INTERNATIONAL DISTRIBUTION OF MONEY



for money in the world as a whole. The intersection of the money line M_oM_o with the L-line determines the equilibrium price level indicated by P_o. The equilibrium stock of money in country 1 is P_oR, in country 2 is RS, in country 3 is ST, and so on.

It is clear from the diagram that a sudden increase in the stock of money occasioned by gold discoveries or new mining techniques would shift the M_oM_o schedule upward, raise world prices and increase the demand for money in each country, resulting in a new distribution of the stock of gold (or silver) around the world in proportion to the increased demands.

Many economists from the 16th to the 18th century had a good understanding of this much of the mechanism and used it to explain the effects of the influx of silver into Europe following the discovery of the first of the three great silver mountains in what was then Peru. It is probable that such early economists as Thomas Mun, Dudley North and certainly, and most explicitly, John Locke had completed this lap of the journey to a complete account of the adjustment mechanism.

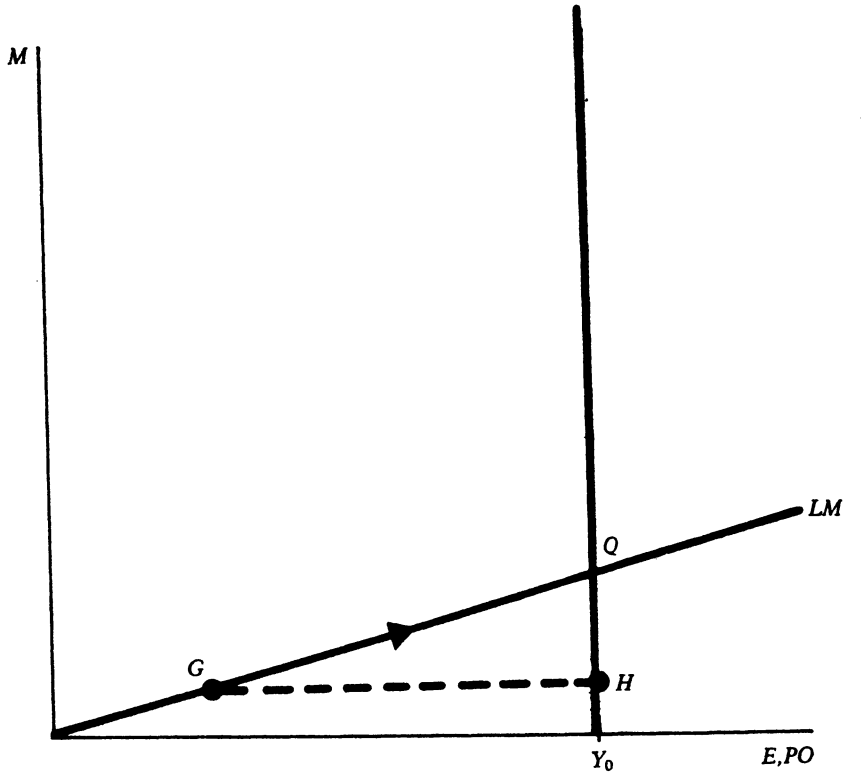
It should be said, however, that the above equations do not present an explicit account of the dynamic process of adjustment to equilibrium. Many of the early economists were content with the final solution, the reduced form, of the analysis, without explicit analysis of the process of adjustment to the equilibrium itself. The complete description of the mechanism was reserved to Gervaise, Cantillon and Hume in the eighteenth century. It is to the dynamics of the mechanism that we now turn.

3.2 *Hume's Theory*

In Graph 2 money income and expenditure are plotted on the abscissa and money on the ordinate. The money equilibrium line is LM which assumes that the demand for money is a linear function of money income. Given the world price level and domestic output there is only one level of money income at which prices will be constant; this is at the income Y_o. The two lines Y_oY_o and LM intersect at the point Q which is the equilibrium. Our interest is in how the system arrives at Q when it is not in equilibrium.

GRAPH 2

HUME'S EXPERIMENT



Consider a disturbance such as that postulated by Hume: «Suppose four-fifths of all the money in Great Britain to be annihilated in one night, and the nation reduced to the same condition, with regard to specie, as in the reigns of the Harrys and Edwards, what would be the consequence? Must not the price of all labour and commodities sink in proportion, and everything be sold as cheap as they were in those ages? What nation could then dispute with us in any foreign market, or pretend to navigate or to sell manufactures at the same price, which to us would afford sufficient profit? In how little time, therefore, must this bring back the money which we have lost, and

raise us to the level of all the neighbouring nations? Where, after we have arrived, we immediately lose the advantage of the cheapness of labour and commodities; and the farther flowing in of money is stopped by our fullness and repletion».

Hume's experiment seems to suggest that the price level would initially fall in proportion to the money supply; but that this would immediately improve the balance of payments and eventually restore the equilibrium quantity of money. In Graph 2 it would seem that a fall in the money supply to one-fifth of the equilibrium money supply would, assuming a given output, lower money income to the level indicated by the point *G*, after which it would shoot up along *LM* to the point *Q* as indicated by the arrow.

The difficulty with this interpretation of Hume is that he explicitly argued that just as prices in different provinces of the same country must be equal, except for transport costs, so prices of transportable commodities in different countries cannot diverge much from one another. Hume is consistent throughout his writings in adhering to the law of one price applied not just to commodities and money but also to labor. How then can be seem to suggest that the price level would drop in proportion when four-fifths of the quantity of money in the kingdom had been annihilated?

At least part of the solution to the puzzle has been advanced by Thomas Humphrey and Robert Keleher in their analysis of the propositions and doctrinal origins of the monetary approach to the balance of payments. They note (61) that Hume received a letter from his friend, the economist James Oswald, who had read an early manuscript of Hume's essay. The letter was dated 10 October 1749, over two years prior to publication. While Oswald conceded in the letter the applicability of the quantity theory of money for a closed economy, he did not think that Hume was justified in applying this proposition mechanically in the case of an internationally trading society: «The increased quantity of money would not necessarily increase the price of all labour and commodities; because the increased quantity, not being confined to the home labour and commodities, might, and certainly would, be sent to purchase both

(61) See HUMPHREY and KELEHER: *(op. cit.)*, pp. 131-7.

from foreign countries, which importation, unless obstructed by arbitrary and absurd laws, would keep down the price of commodities to the level of foreign countries».

Hume replied to Oswald one month later, willingly conceded the point and agreed to change the draft before publication.

Humphrey and Keleher argue that Hume intends his miraculous changes in the money supply to be pedagogical supposition in order to prove that significant price reductions cannot take place (62). For in the very next paragraph following these monetary miracles Hume writes: «Now it is evident, that the same causes, which would correct these exorbitant inequalities, were they to happen miraculously, must prevent their happening in the common course of nature, and must forever, in all neighbouring nations, preserve money nearly proportional to the art and industry of each nation. All water, wherever it communicates, remains always at a level. Ask naturalists the reason; they tell you that, were it to be raised in any one place, the superior gravity of that part not being balanced, must depress it, till it meet a counterpoise; and that the same cause, which redresses the inequality when it happens, must for ever prevent it, without some violent external operation».

The Humphrey-Keleher interpretation of Hume is convincing. It means that Hume was not the originator of the "price-specie-flow" mechanism. But it leaves open the question of how adjustment, following Hume's hypothetical experiment, does in fact take place. In one place Humphrey and Keleher seem to suggest that the miracle could not take place; in another that adjustment takes place through the real balance effect on expenditure. Hume leaves us in the dark about the exact mechanism and resorts to allegorical reasoning which, while apt, does not help to elucidate the differential equations that describe the process of adjustment.

3.3 *Two Concepts of Relative Prices*

There are two distinct concepts of relative price changes that need to be carefully separated. One idea of the combined mechanism

(62) See HUMPHREY and KELEHER, *ibidem*, p. 135.

is based on two dynamic processes: 1) a fall in the money supply lowers all prices slightly below the prices abroad; and 2) this produces arbitrage that results in an export surplus and an increase in the money supply. The differential equations reflecting these processes can be written as follows:

$$dP/dt = A(M - kPO) \tag{8}$$

$$dM/dt = B(P_o - P) \tag{9}$$

where P_o is the world, and P the domestic price level); A is a constant speed of adjustment and B is the balance of trade function. This dynamic process is plotted in Graph 3. The direction of change in the variables from typical points, A, B, C, and D in the four quadrants are indicated by the arrows. On these postulates, it is readily shown that the path to equilibrium, from Hume's disequilibrium, H, is stable. But the approach to equilibrium may be cyclical (63). The more rapidly arbitrage takes advantages of price differentials the more quickly the balance of payments responds to changes in relative price levels, and the more likely the price level and money supply will overshoot equilibrium and oscillate around it in convergent cycles.

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(63) The approach to equilibrium can be found by solving a linearized version of the system to get its characteristic equation

$$m_2) +) AKOm) +) AB) = 0$$

where B shows the (assumed positive) effect of a reduction in the price level on the balance of payments. Convergence to equilibrium requires that the real parts of m in the solutions are negative; this is assured, for a quadratic, by the positive coefficients of m in the characteristic equation. The roots will be complex, and the path to equilibrium cyclical, if and only if the discriminant of the solutions is negative, i.e., only if

$$A) (KO)2) <) 4B,$$

which will be the case if the trade balance responds quickly to price differentials, if the fraction of income held in the form of money is low, and if prices move sluggishly in response to an excess supply of money.

Why worry about overshooting and cyclicity? Disequilibrium positions are suboptimal and prolongation of disequilibrium is not efficient. More important, perhaps, that when one or more additional variables are taken into account, the extra variable has the effect of shocks that can tip the cyclically stable system into an unstable one.

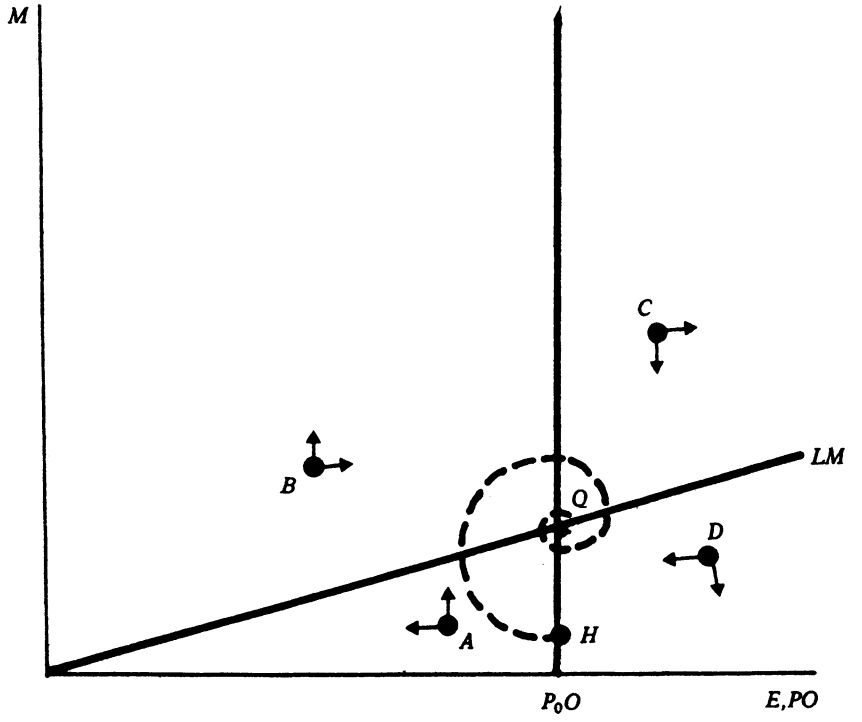
It is important to notice that the adjustment of prices here do not imply changes in the terms of trade or any other changes in relative prices of different goods; the price differentials refer to the *same* commodities at home and abroad, creating the opportunity for arbitrage profits. The adjustment mechanism described above works through short-term discrepancies from the law of one price.

The second concept of price adjustment involves changes in the relative price of one country's export goods in terms of the other, i.e., changes in the terms of trade. This is entirely consistent with an instantaneous version of the law of one price. It is this second version price-adjustment that was taken up by Mill, Marshall, Taussig and Keynes.

Which process did Hume have in mind?

GRAPH 3

ALTERNATIVE DYNAMIC POSTULATES



Viner attributes to Hume a terms of trade concept which plays a determining role in the adjustment process (64). Humphrey and Keleher, however, believe Hume understands the mechanism by which money inflows lead to an increase in expenditure via the real balance effect, quoting Hume's remark that (65): «It is impossible to heap up money, more than any fluid, beyond its proper level».

However, Hume's failure to make the mechanism explicit (e.g., in contrast to Gervaise) suggests that he was not completely clear himself about what the mechanism was. It is difficult to escape the view that he wandered between two stools, wanting prices to stay the same all over the world, but nevertheless wanting price differences — of some unspecified kind — to assist in the adjustment mechanism; his intuition seems to have grasped the point, but not his logic.

It is nevertheless useful to put modern words into Hume's mouth in order to clarify the mechanism that operates when the law of one price prevails and when the terms of trade do not change. The law of one price holds the price level at P_oO. The question now is, how should Hume have discussed adjustment without allowing changes in the terms of trade or contravening the law of one price?

First we start with the basic equation for national income:

$$Y = E + B, \tag{10}$$

and then define income as follows:

$$Y = PO \tag{11}$$

where O is output. Now we consider a general expenditure function:

$$E = E(Y, M)$$

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(64) See VINER: *loc. cit.*, p. 292 and pp. 319-20. Viner states that «This was almost universally accepted doctrine during the next century». The facts were otherwise.

(65) See HUMPHREY and KELEHER: *loc. cit.*, p. 136.

It will convenient to use an explicit form of this function (66) of the type

$$E = Y + a(M - kY) \tag{13}$$

in order to express the idea that in this simple economy expenditure is higher or lower than income depending on whether there is an excess supply of demand for money. The balance of payments equation is

$$B = dM/dt \tag{14}$$

These equations suffice to determine both the equilibrium and the approach to it. The *LM* line in Graph 4 equates both the demand for money with the supply of money, and expenditure with income. Above *LM* there is an excess supply of money, an excess of expenditure over income and a balance-of-payments deficit, so the money supply is contracting. Similarly below *LM* there is a surplus in the balance of payments and the money supply is expanding. After Hume's miraculous annihilation of the money supply, we move from the point *H* to the point *G*. But what has adjusted here is not the price level; that is constant. It is expenditure that has adjusted to the reduction of wealth and liquidity. Perfect arbitrage will keep price levels the same in the two countries, but the balance of payments will

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(66) An expenditure function of this form was used in an important article by S.J. PRAIS: "Some Mathematical Notes on the Quantity Theory of Money in an Open Economy", *International Monetary Fund Staff Papers*, vol. 1, 8, n. 2, May 1961. It reduces to:

$$E = (1 - ak)\, Y + aM$$

a special case of a consumption function with a real balance effect. More compatible with Keynesian multiplier theory is the following:

$$E = A + cY + a(M - kY) = \\ = A + (c - aK)\, Y + aM$$

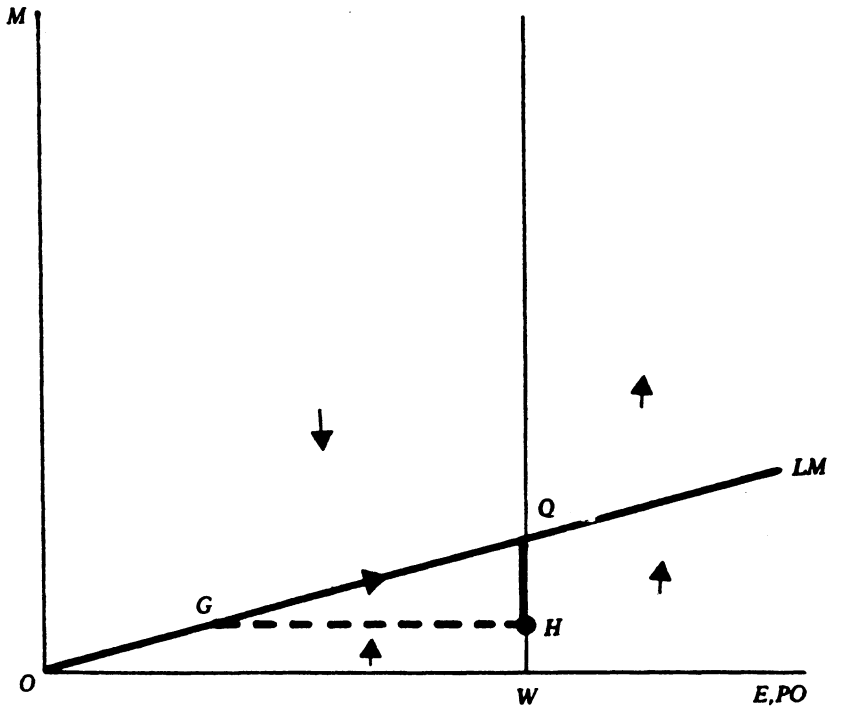
which, however, differs in form only by the intercept for autonomous spending. A choice between the hypotheses could be made by determining whether the intercept is significantly different from zero.

improve because expenditure quantities fall below income. The rate of increase in the money supply will be proportionate to the gap between expenditure and income. The path of adjustment will be *LM* on along *GQ* in the direction of the arrow. The path of adjustment will therefore obey the equation

$$dM/dt = a(kY - M) \tag{15}$$

GRAPH 4

HUME'S DYNAMICS



3.4 *Modification for Credit*

The above equations system is only preliminary to an analysis of Hume's theory. Hume was the first to discover that an increase in credit money, under a convertible currency system, would not cause inflation. Instead, it would drive out specie, leaving the total money supply, including both credit money and gold, unchanged. It is easy to

see that Hume's proposition is an application of Gresham's Law, with bad money, credit, driving out good money, gold. Smith accepted Hume's analysis and supplemented it by showing that the same proposition holds for the case of paper money. Several years later Thornton argued that the resulting export of gold would cause inflation in the rest of the world and, by the law of one price, raise prices at home.

The above equations do not make a distinction between credit or paper money and gold and thus need to be modified to take into account the Hume-Smith-Thornton refinements to the basic model. Assume therefore that there are two kinds of money: gold and paper currency, the latter being negotiable only in the home market. Then the total money supply is equal to:

$$M = R + D \tag{16}$$

where R represents reserves (gold) and D the domestic currency (whether in the form of banknotes or legal tender). Now the balance of payments equation is:

$$dR/dt = B \tag{17}$$

which replaces equation *(14)* above. In Graph 5 the total money supply is WQ. Let us suppose it is initially entirely in gold. Then an increase in bank credit or paper money that was a substitute for gold in domestic transactions equal to QV would cause an accumulated balance-of-payments deficit of like amount. The only requirement would be that confidence in the convertibility of the paper money or bank credit into gold be maintained.

This would set limits on the extent of the substitution possible without endangering confidence.

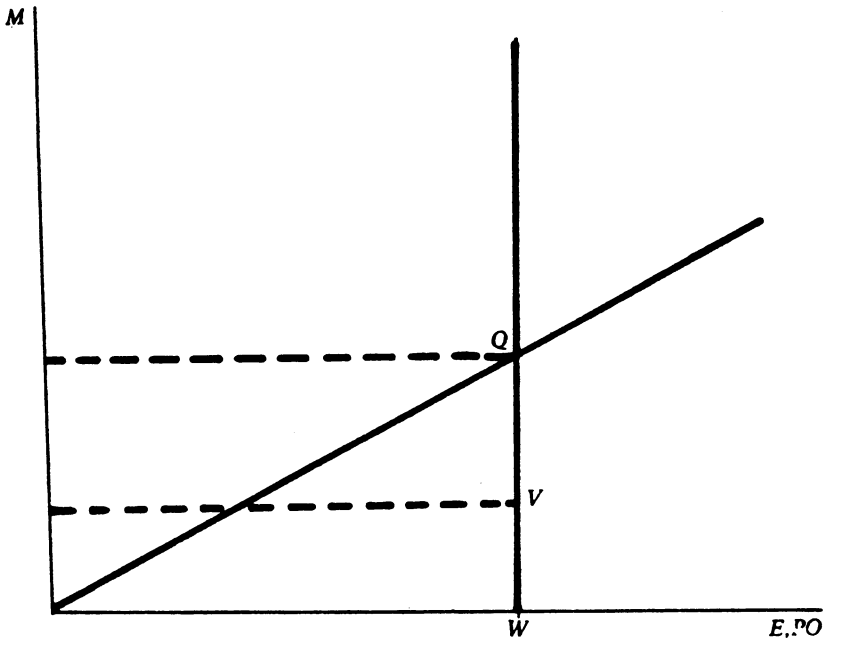
Thornton argued correctly that this substitution of credit for gold in the domestic money supply would cause inflation abroad (67). The

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(67) HENRY THORNTON (1760-1815) wrote *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain* in 1802, Fairfield, Augustus M. Kelley, 1978. Thornton adopted a distinctly short-run model of the monetary process that took account of the effects of the interest rate on expenditure and international capital movements. He understood the inter-regional banking mechanism and applied it to the theory of international adjustment under convertible currencies.

GRAPH 5

REPLACEMENT OF SPECIES WITH CREDIT OR PAPER MONEY



extent of its importance would depend on the relative size of the domestic country and the rest of the world. Obviously if a country represented only, say, 1% of the world economy (more exactly if it held 1% of the world's gold stock), even a 50% substitution of paper money for gold would cause at most a 0.5% inflation in the world as a whole and therefore also at home. The ratio of the increase in the credit to the inflation it caused would be 100 to 1. But if the domestic country were, say, 50% of the world economy the same proportionate paper money expansion would result in a price increase of 25% in the world and at home. The Thornton factor cannot be ignored.

Thornton's amendment to Hume's analysis has wide applicability in international monetary history. When one country economizes on gold it creates inflation abroad; when it hoards gold it causes deflation. The great appreciation of gold (deflation) from 1873 to 1986 was

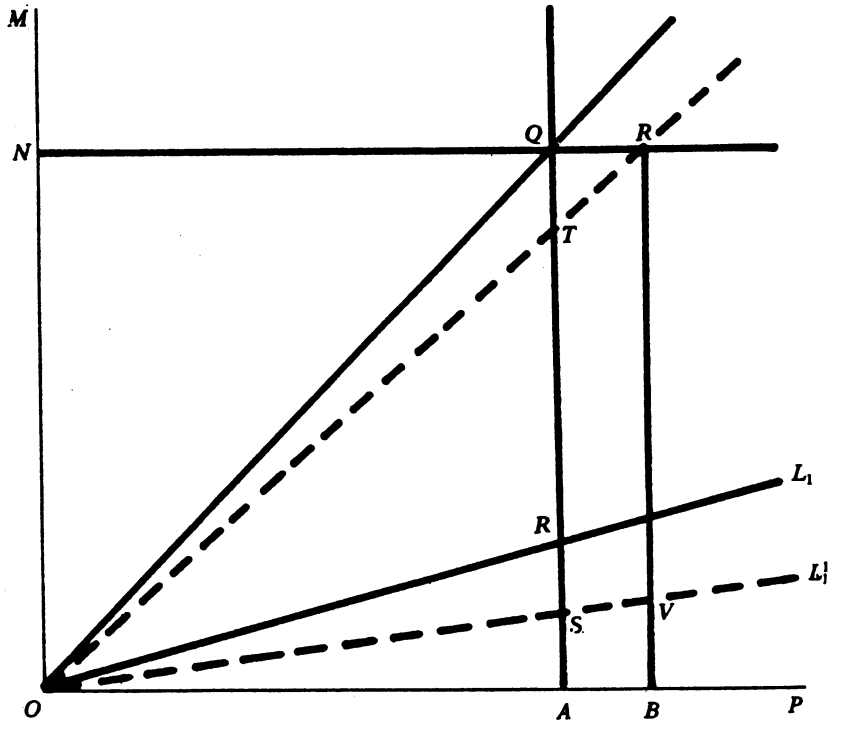
induced partly, as we have seen, by the entry into the gold standard of France, Germany, the Scandinavian countries and the US. A more striking episode occurred after 1914 when the European countries abandoned gold after the outbreak of World War I and the United States suffered from imported inflation. Again, when the rest of the world went back to the gold standard after 1924, the increased demand for gold, and especially the gold hoarding of France, set the stage for the great deflation and depression. When Europe in the 1950s and early 1960s converted dollar balances into gold, it ensured the breakdown of the Bretton Woods system. When in the late 1970s Europe dumped dollars in an attempt at "diversification", the dollar depreciated excessively, and the reversal of that movement in the early 1980s created an overvalued dollar. Then again, after the dollar peaked in February 1985, and fell, speculative shifts out of the dollar caused its over-depreciation only to be somewhat reversed. Thornton's refinement of Hume's idea, we can see, has many offspring.

Consider Graph 6 which reproduces the essentials of the world diagram in Graph 1. The gold price level is plotted on the abscissa and the stock of gold on the ordinate. Let us suppose that a country replaces half of its gold with paper money. Then the slope of the L_1 schedule, defining country *I*'s demand for gold, is cut in half, to intersect the line *AQ* at *S*. The fall in the demand for gold in country *I* of course lowers the world demand for gold by an equivalent amount, $RS = QT$. The world price level rises from *OA* to *OB*, a proportionate increase of *AB/OA*. The higher world price level raises the world demand for gold until again supply is equal to demand. It is easily seen that the increase in the world price level depends on the share of country *I* in the world's gold supply and the degree to which gold is substituted. In the diagram the increase in the world price level is $AB/OA = QR/NQ$ which is approximately equal to $QT/AQ = RS/AQ = (AS/AQ)\,(AS/AR) = ZW$, where $Z = (AR/AQ)$ is the initial share of gold in country I in the world as a whole, and *W* is the proportionate displacement of gold in country *I*.

The home country's equilibrium gold stock will now be slightly higher than it was before taking into account inflation in the world as a whole. Half the gold initially leaves the country, at constant world prices, as a result of an increase in credit or paper money equal to 50%

GRAPH 6

EFFECTS ON WORLD PRICE LEVEL OF CREDIT EXPANSION



of the money stock, but the actual increase in world prices will raise the demand for gold and thus lead to a reduction in spending to finance an increase (or a lesser loss) in the country's gold stock. The increase in gold *VB* will be greater than *SA*, and *VB* will be more than half of *SA*.

3.5 *Growth Analysis in the Classical Equilibrium*

The classical economists did not develop a theory of growth, and they did not therefore have a theory of the relationship between growth and the balance of payments. Indeed, in Viner's *Studies*, the

word growth hardly appears! (68). Nevertheless it is apparent what that growth analysis would have been had, say, Ricardo tackled it, on the assumption of fixed exchange rates and convertible currencies. Arguing from the theorem of the equilibrium distribution of specie, which depends on population and income, it is natural to suppose that when population and incomes in various countries change the equilibium distribution changes. Thus if, in a static world, one country starts to grow it will attract gold and induce deflation (or less inflation) in the world as a whole. The "surplus" country of course will be the growing country, but both will share equally in the deflationary conditions in the world as a whole.

In order to introduce growth considerations explicitly into our analysis it is necessary to introduce stocks of capital and money and rates of interest and growth. In the right-hand part of Graph 7 the capital stock per capita is plotted on the abscissa and the rate of interest on the ordinate. The *K*-schedule delineates the declining marginal product of capital as the capital stock per capita increases. The international interest rate, assumed to be constant, is equal to *OG*, so that the equilibrium capital stock in the country is *GD*. The *S*-schedule describes the supply of capital; it rises with the rate of interest (69). At the international interest rate the supply of domestic

(68) There is no entry for growth in the subject index of Viner's *Studies*. The closest reference to growth is in the footnote on p. 312: «This definition, of course, would fit only a static world in which the world stock of monetary gold was subject neither to accretion from mines nor to depletion by wear and tear or industrial use, or else a world in which each country produces the gold it needs for industrial consumption or to replace monetary wear and tear».

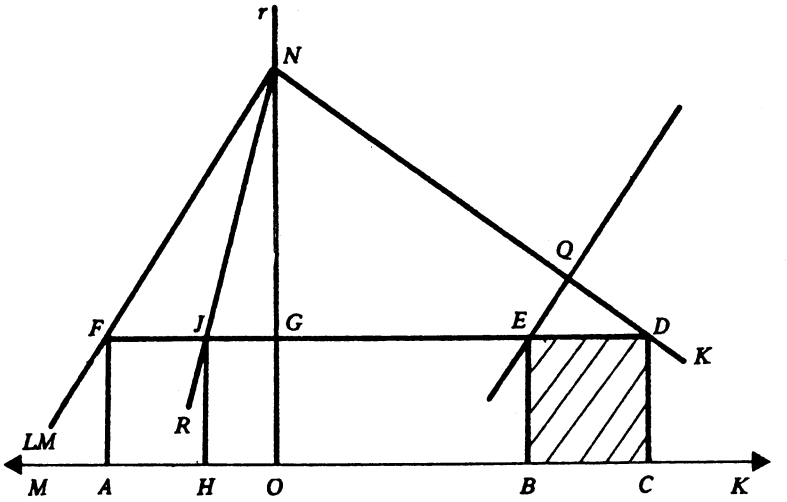
The following section expands on some of the analysis presented in my article "Barter Theory and the Monetary Mechanism of Adjustment" presented at the World Bank Conference on Capital Movements and Economic Development in 1965, and published in *Capital Movements and Economic Development* (ed. J. H. Adler), London, MacMillan, 1967; a revised version was published in my *International Economics*, New York, MacMillan, 1968, Ch. 8; see also "Growth and the Balance of Payments," distributed at the 1966 Chicago Conference on International Monetary Problems and published as Chapter 9 of *International Economics*. See also related work in my *Monetary Theory: Interest, Inflation and Growth in the World Economy*, London, Goodyear, 1971.

The common charge that the classical theory of comparative advantage was static has its counterpart in the classical theory of the balance of payments adjustment mechanism.

(69) This assumes that there is some substitutability between private (household) and commercial capital, and that the greater the return to commercial capital the more incentive there is to shift capital from private to commercial use.

GRAPH 7

EQUILIBRIUM OF STOCKS



capital is *GE*. The difference between the equilibrium capital stock and the domestic supply of capital is made up by foreign capital, which represents the net indebtedness of the country.

Monetary equilibrium is depicted in the left part of Graph 7. The liquidity-preference schedule and the money-equilibrium curve is the line *LM*, which is assumed to be a function of the rate of interest. It is assumed here that the ratio of reserve money (gold or foreign exchange reserves) to the total money stock is indicated by the *R*-curve, a constant fraction of the *LM* schedule. The equilibrium level of reserves, *JG*, backs the equilibrium money supply, *FG*, with a reserve ratio of *JG/FG*. Total wealth is *HC* if only outside money is counted in wealth, but is *AC* if the banking liabilities are neglected in the calculation of financial assets.

Gross Domestic Physical Product is the area *ONDC*. The area *OAFG* is gross financial product. The area *BEDC* is the interest that must be paid out of Gross Domestic Product to foreign owners of the capital stock, so Gross National Physical Product is the smaller area *ONDEB*. The gains (in the sense of net rent) from the use of foreign capital is the triangular area, *QED*. The area *OGEB* represents the

return to domestic capitalist; *BEDC* the return to foreign capitalists; *NGD* the return to other domestic factors; *OAFG* is the reward to liquidity; and *NFG* is the return to other factors associated with the provision of the financial services. Indeed the area *FND* could be considered as the total reward to factors of production other than capital.

Total spending must be equal to Gross National Product. not the Gross Domestic Product, in order to ensure a zero current account balance of payments and a trade surplus equal to the area *BEDC*. The following equations represent the conditions of equilibrium of the static system:

$$Y = E + B \tag{18}$$

the national accounts equation;

$$E = Y - rZ + a\,(M - kY) \tag{19}$$

where Z represent net debt to foreigners;

$$B - rZ = dR/dt \tag{20}$$

the balance of payments equation (assuming no new capital movements), with R represents gold, silver or foreign exchange reserves;

$$M = R + D \tag{21}$$

the balance sheet (70) of the monetary system;

---

(70) Of course R and D must both be measured in domestic currency. If R is denominated in foreign currency it would have to be multiplied by the price of foreign exchange. When, in that case, this equation is differentiated there will be a term allowing for "capital gains" or "profits" of "seigniorage" from depreciation. Thus let R^* be the value of foreign exchange in foreign currency and e its price in terms of domestic currency (the exchange rate). Then differentiation of $M = eR^* + D$ yields $dM/dt = e\,dR^*/dt + R^*\,de/dt + dD/dt$. The first term on the right represents "devaluation profits" which can be used for special purposes. Thus after the US devalued the dollar in 1934 the devaluation profits were set aside in an "exchange equalization fund" and later, in 1945, used to finance the US payment of its gold tranche in the IMF quota. Devaluation "profits" are frequently used for "off-budget" expenditure in countries with flexible exchange rates and no constitutions.

(22) $$R = bM$$

where b is the ratio of reserves to monetary liabilities;

(23) $$dR/dt = 0.$$

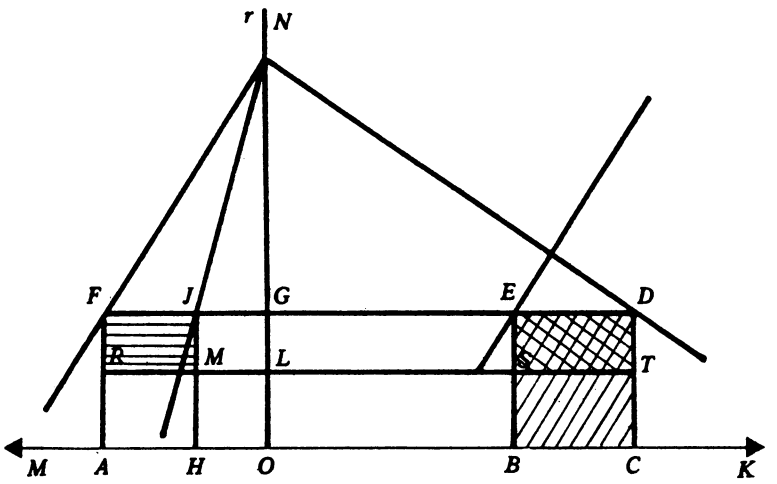
3.6 *The Effects of Economic Growth*

Consider now the implications of balanced economic growth. In Graph 8, Gross Domestic Product is again the area *OCDN*, and Gross National Product is Gross Domestic Product less interest payments, *BCDE*, on the foreign debt. In order to introduce growth it is assumed that population and the labor force are growing at a certain rate, *GL*, and that a certain fraction of income is saved in order to generate an increase in growth of domestic capital at the same rate *GL*, and also to finance an increase in foreign exchange reserves.

The former requires saving of *GLSE* and the latter *GLMJ*. The debt will also be growing at the rate *ES* and inward capital movements will be the area *STDE*. This represents balanced growth in the sense

GRAPH 8

BALANCED GROWTH



that the ratio of foreign to domestic capital is preserved by capital imports at the same rate as the home-owned capital stock is growing.

Economic growth will also increase the demand for money and the demand for reserves. To satisfy this demand without changing the reserve ratio requires domestic money creation equal to *MJFR* and a balance-of-payments surplus equal to *LMJG*. The trade balance will be in surplus to the extent of interest payments, *BEDC*, and the imports of international reserves, *GJML*, less capital inflows of *ESTD*. The balance of payments categories will be

$$(24) \qquad dR/dt = LGJM$$

which specifies the change in reserves;

$$(25) \qquad dK/dt = ESTD$$

which specifies the inflow of capital; and

$$(26) \qquad rZ = BCDE$$

which specifies the outward interest payments (Z denotes net indebtedness). The balance-of-trade surplus is:

$$(26) \qquad B = rZ - dK/dt + dR/dt =$$

$$= BCDE - ESTD + LGJM = BCTS + LGJM.$$

3.7 *Saving and the Balance of Trade*

As noted above the country is increasing its foreign debt in the same proportion as its home-owned capital stock. Suppose, however, that the country wants to stop increasing its debt. The therapy is to increase its saving. Consider then the effects of an increase in saving equal to the former capital imports. In this case the entire capital stock continues to grow at the rate *GL* but capital inflows cease, the foreign debt does not increase, and the share of foreign-owned capital declines over time. This increase in saving results in a corresponding

increase in the excess of exports over imports. The new trade balance is now equal to:

$$(27) \qquad B = rZ + dR/dt = BCDE + LGJM$$

3.8 *Monetary Policy and the Balance of Payments*

How does monetary policy affect the balance of trade and payments under the assumption that capital is perfectly mobile? The conventional reasoning is that with perfect capital mobility and fixed exchange rates monetary expansion, in the form, say, of open market operations, results in an outflow of reserves but has no effect on he balance of trade (71). The present analysis shows this conclusion to be untrue. For let us consider a domestic credit expansion sufficient to satisfy the demand for money without importing reserves. The total increase in domestic money is therefore *GLRF* and this fully satiates the demand for money, requiring no extra saving to finance the increase in reserves equal to *LGJM*. The trade balance is reduced by an equal amount and will now result in a trade balance surplus equal only to the outward interest payments *BCDE*, which becomes a declining proportion of GNP. The explanation of the reduction in the trade balance is the decrease in national saving induced by the central bank lending.

4. - General Equilibrium Analysis

The great merit of the classical model is that it shows the patterns that are consistent with equilibrium and therefore provides guidelines against the common mistake of confusing equilibrium with disequilibrium. But in order to make it useful it is necessary to take into account

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(71) There will be (perhaps slight) budgetary implications if there is a difference, as there normally is, between the interest rate that the central bank receives on foreign exchange reserves and government debt. If the additional central bank receipts are turned over to the government it will have a budget surplus (or a reduced deficit) which will change current financing needs or induce a reduction in taxes, part of which may be capitalized, increasing wealth, reducing saving and worsening the balance of trade. Against this, however, must be set the effect on residents of the reduced level of national reserves, a public good.

more of the complexities of the real world. This requires general equilibrium analysis of the world economy.

It is possible to discuss the balance of trade or the balance of payments in a general equilibrium context that takes into account international capital movements. Because of the interaction of *Walras' Law* (72) and *Cournot's Law* (73) in international general equilibrium analysis, and also because of intertemporal "budget equations", it is possible to show that the balance of payments or the balance of trade can each be defined in no less than sixten different ways (74).

4.1 *The Sixteen Approaches*

From that axiom of economics known as *Walras' Law* the balance of payments of a country (or any entity) is zero; all expenditures must be paid for. Inside a closed economy *Walras' Law* means that all excess demands are zero. In an open economy the excess demands must be balanced by a corresponding excess supply in the

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(72) OSCAR LANGE, in his *Price Flexibility and Full Employment* (Cowles Commission, 1944) introduced the term *Walras' Law* to denote the concept that was known to all the classical economists but which Walras made such effective use of in his mathematical analysis. *Walras' Law*, that the sum of all excess demands is identically equal to zero, follows from the concept of demand and supply, as used by economists, that neither can exist without an equivalent quid pro quo. If there are n goods only n-1 excess demand equations are necessary to establish the equilibrium prices. Its close cousin, the homogeneity postulate, conveniently ensures that there are only n-1 relative prices. The original work of Walras is of course LEON WALRAS: *Elements d'Economie Politique Pure ou Theorie de la Richesse Sociale*, Lausanne, 1874. For an excellent recent discussion of Walras' contributions to economic theory, that goes considerably beyond its modest title, see DONALD A. WALKER: "A Primer on Walrasian Theories of Economic Behavior," *HES Bulletin*, n. 11-1, Spring 1989.

(73) Cournot was the first to make extensive mathematical use of the proposition that the sum of all balances is zero. See A. COURNOT: *Researches in the Mathematical Principles of the Theory of Wealth*, translated by T. Bacon, New York, MacMillan, 1897. I introduced the term in "The Pure Theory of International Trade," *loc. cit.*, p. 44; see also, pp. 45, 52, 55, 144, 305.

(74) The following analysis generalizes the international flow-of-funds table in my article, "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science*, n. 29, November 1963 pp. 475-85, reprinted in the CAVES and JOHNSON volume of *Readings in the Theory of Internaional Trade*, and in my *International Economics*, loc. cit., Ch.18. I first presented the "Sixteen Approaches to the Balance of Payments" at the Inter-American Conference on *Financial Markets* in Carabelleda, Venezuela in 1979, and I have discussed the same question with an elaboration of the global reserve-creating mechanism in the Mondragone Seminar Paper referred to above.

rest of the world. These excess demands in an open economy correspond to the categories of the balance of payments accounts. Thus the excess supply of goods and services is equal to balance-of-trade surplus; the excess supply of securities is equal to capital imports; and the excess supply of money is equal to the balance-of-payments deficit.

Four concepts of the balance of payments follow from these relationships. If our interest is in the balance of trade, we define four concepts of the balance of trade, bearing in mind that a similar procedure would yield results appertaining to the balance of payments itself, the capital account or, after allowing for transfers, the current account. First we have the definition of the balance of trade itself as the difference between exports and imports. Second, we have the equality of the balance of trade as the difference between national output and domestic expenditure. Third, we have the equality of the balance of trade to the net capital exports and the increase in net foreign exchange reserves. Fourth, we have the equality of the balance of trade and the combined excess demands for securities and foreign exchange reserves.

It is now necessary to take into account *Cournot's Law* which involves the rest of the world. *Cournot's Law* refers to the fact that the global excess demands of each category of the balance of payments is zero. The sum of all exports equals the sum of all imports, so the trade surplus of one country is equal to the trade deficit of the rest of the world (75). Every excess supply in one category in one country implies a corresponding excess demand in the rest of the world. There are, therefore, four concepts of the balance of trade in the rest of the world corresponding to the four concepts already discussed. Thus *Walras's Law* and *Cournot's Law* together imply eight concepts of the balance of trade for the country (any country) under analysis.

Suppose there are three categories of the balance of payments isolated for special analysis: goods, securities and money. Let $Y - E$ be the excess supply of goods and services in a country; $A - Z$ the excess supply of securities; and $G - H$ the excess supply of money. Y can be identified with national output or GNP, E with domestic

(75) This holds, as we have seen, only if there is no asymmetric treatment of the specie exports of gold. These asymmetries are ignored in the present formulation.

expenditure or "absorption", A and Z with the supply of and demand for securities respectively; and M with new money creation and H with the hoarding demand for money. Then the equations specifying that world supply and demand for goods, securities and money are equal and can be written as follows:

(28) $$Y + Y^* = E + E^*$$

(29) $$A + A^* = Z + Z^*$$

(30) $$G + G^* = H + H^*$$

Our interest however is in the categories of the balance of payments, specifically the trade balance B, capital exports, K, and the balance of payments surplus P. By rearranging terms we get:

(31)	$Y-E$	$=$	B	$=$	$-B^*$	$=$	E^*-Y^*	Goods
	$+$		$+$		$+$		$+$	
(32)	$A-Z$	$=$	$-K$	$=$	K^*	$=$	Z^*-A^*	Securities
	$+$		$+$		$+$		$+$	
(33)	$G-H$	$=$	$-P^*$	$=$	P^*	$=$	H^*-G^*	Money
	0		0		0		0	

By *Walras' Law* the excess demands (in value terms) sum to zero so that the vertical equations also sum to zero.

The eight approaches to the balance of trade (or payments) follow immediately. First we have the definition of the balance of trade itself as the difference between exports X and imports M for each country:

	Home country	Rest of the world
(Elasticity approach)	$B = X - M$	$B^* = X^* - M^*$
(Absorption approach)	$B = Y - E$	$B^* = Y^* - E^*$
(Financing approach)	$B = K + P$	$B^* = K^* + P^*$
(Savings approach)	$B = Z - A + H - G$	$B^* = Z^* - A^* + H^* - G^*$

The equations on the left and right sides are connected by *Cournot's Law*, $B+B^*=0$.

The additional approaches derive from intertemporal analysis that takes into account the accumulation of flows into stocks. The accumulated balance of trade of any country is confined between upper and lower bounds determined by debt-carrying capacity and pressures on liquidity. Thus

$$R_u < Bdt > R_1 \tag{34}$$

where R_u is the upper bound on the net international position and R_1 is its lower bound. What holds for B holds for all the equivalences of B, giving another seven approaches to the balance of payments. The role of stocks cannot be ignored in equations determining the international accounts. We worry about balance-of trade and balance-of-payments problems because we worry about stocks. The same "Ricardo-equivalence" analysis applies in the international monetary field in real terms, as that wich applies to government budgets.

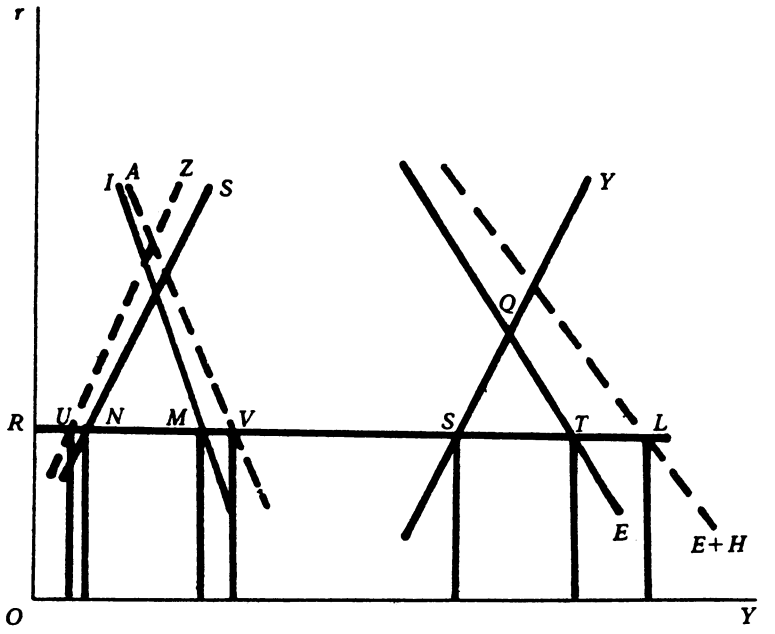
4.2 *The Composition of the Balance of Payments Accounts*

In Graph 9 the abscissa represents output and the ordinate the rate of interest. E is the curve of domestic expenditure (absorption) expressed as a function of the domestic rate of interest. All other variables are held constant. The E curve has a negative slope because at lower interest rates domestic expenditure is higher. The Y curve, on the other hand, expresses the national supply of output at varying interest rates; it has a positive slope because as the interest rate rises producers shift production from the future to the present. In a closed economy equilibrium would settle at the point Q defining both the equilibrium rate of interest and the level of national income and domestic expenditure. The level of the ordinate at the point of intersection of E and Y would correspond to the point of intersection of the saving and investment curves.

To introduce the rest of the world most simply let us assume that prices, including interest rates, are constant and there is perfect mobility of capital, goods and money. We also assume there is no

GRAPH 9

COMPOSITION OF THE BALANCE OF PAYMENTS



domestic money production (no gold mines or central bank) so that all increases in money have to be imported. Let *OR* be the interest rate abroad, and as drawn *OR* is lower than the domestic autarkic rate of interest, so that expenditure will exceed income by the amount *ST* at that rate of interest, which also measures the balance of trade deficit.

To determine the other categories of the balance of payments from the diagram it is necessary to define the demand for and the supply of securities. The supply of securities equals the sum of investment and net business hoarding; and the demand for securities is the difference between saving and net consumer hoarding. The *A* curve is the supply of securities and the *Z* schedule is the demand for securities; they are equivalent, respectively, to the demand for and supply of loanable funds. The excess supply of securities, and the capital inflow, is *UV*, which finances both the trade deficit, *ST* = *NM*,

and the accumulation of money due to growth on the part of consumers, UN, and producers, MV.

It will simplify the exposition of the following analysis, when we take into account the government sector, to aggregate the hoarding propensities of consumers and producers into a national hoarding schedule. At every rate of interest there will be a given demand for additional money on the part of households and firms that will ordinarily be related to the rates of growth of income of the two sectors. This national hoarding schedule is the sum of the horizontal distances of the S curve from the Z curve, and the A curve from the I curve at alternative rates of interest. This hoarding schedule (not drawn) is added to the E curve to get the $E + H$ curve, which intersects the interest rate axis RT at the point L. The distance TL represents national hoarding and the balance-of-payments surplus of the growing country. Net borrowing, and the increase in accumulated net indebtedness required to finance both the trade deficit and the imports of money from abroad, is equal to $SL = UV$.

The configuration in Graph 9 links three approaches to the balance of trade deficit: first, it is the difference between expenditure and income, and investment and saving: $RT - RS = ST = NM$. Second, it is the difference between net capital imports (net exports of securities) SL and imports of money (balance-of-payments surplus) TL, so that $SL - TL = ST$. Third, it is equal to the difference between the excess supply of securities, $RV - RU = UV\ (= SL)$, and the excess of hoarding over domestic money production (here assumed to be zero), $UN + MV\ (= TL)$.

4.3 *Central Banks Create Deficits*

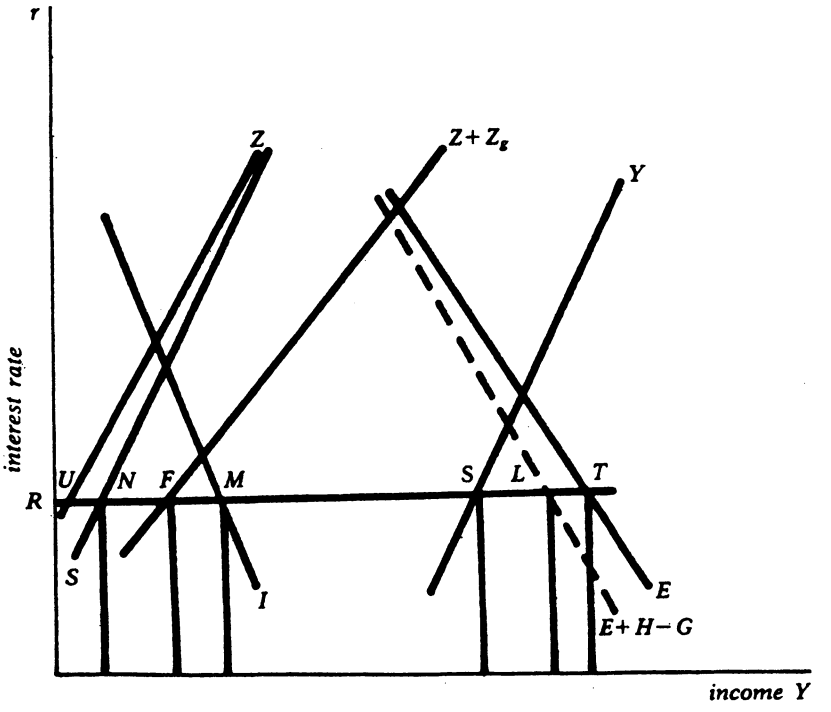
The above analysis applies to a small open, growing economy that imports all additions to its money supply. In this section we make allowance for the domestic production of money by a central bank. The central bank is assumed to hold international reserves and domestic assets (e.g. securities), and to conduct open market operations to increase the money supply. This time we shall include business hoarding in total saving so that all investment is identical to the supply of securities.

In Graph 10 the *E* and *Y* schedules and the foreign interest rate *OR* are as in Graph 9. The *S*-curve is the saving schedule; the *Z*-schedule describes that component of saving that is manifested in the demand for securities; the horizontal difference between the *Z*-and *S*-curves represents hoarding. The *A*-curve is now identical to investment schedule, *I*. Thus the investment-saving gap is *NM* which corresponds to the balance of trade, also equal to *ST*. But now the balance of payments is affected by the activities of the central bank; the latter cannot alter the rate of interest or the money supply, but it will determine the balance of payments.

If the central bank created no money there would be an excess demand for money equal to *UN*, a corresponding balance-of-payments

GRAPH 10

EFFECTS OF CENTRAL BANK INTERVENTION



surplus and a capital inflow equal to *UM*, needed to finance both the money accumulation and the trade deficit. But now suppose that the central bank conducts open market operations at the rate of *UF*, buying securities and issuing new money. The demand for securities is increased by *UF* so that the new total demand for securities is the *(Z + Zg)*-schedule which intersects the interest rate line *RT* at the point *F*. Both the excess supply of money and the excess demand for securities are *NF*, which represents the balance-of-payments deficit, which must be paid for out of the reserves of the central bank. At the new equilibrium the balance of trade is unchanged, compared to the situation before the introduction of central bank policy, at *NM*. But the capital inflow has been reduced by *UF* to *FM* and the balance of payments has been reduced from a surplus of *UN* to a deficit of *NF* (76).

The equilibrium can be determined more quickly by making the appropriate adjustments to the *Y* and *E* schedules. To the *E* schedule in Graph 10 must be added the excess demand for money, in this case negative, to get the *(E + H − G)*-schedule, which intersects *RT* at *L*. It then follows that the trade deficit is paid for by capital imports of *SL* and a reduction of foreign exchange reserves of *LT*.

The position in the diagram is not a final equilibrium because the central bank is running down its holdings of foreign exchange. It would eventually have to reduce its rate of monetary expansion to *UN* which would exactly achieve equilibrium in the balance of payments with the capital inflow exactly financing the trade deficit. Even this is not a complete equilibrium because of the increase in indebtedness implied by the capital imports.

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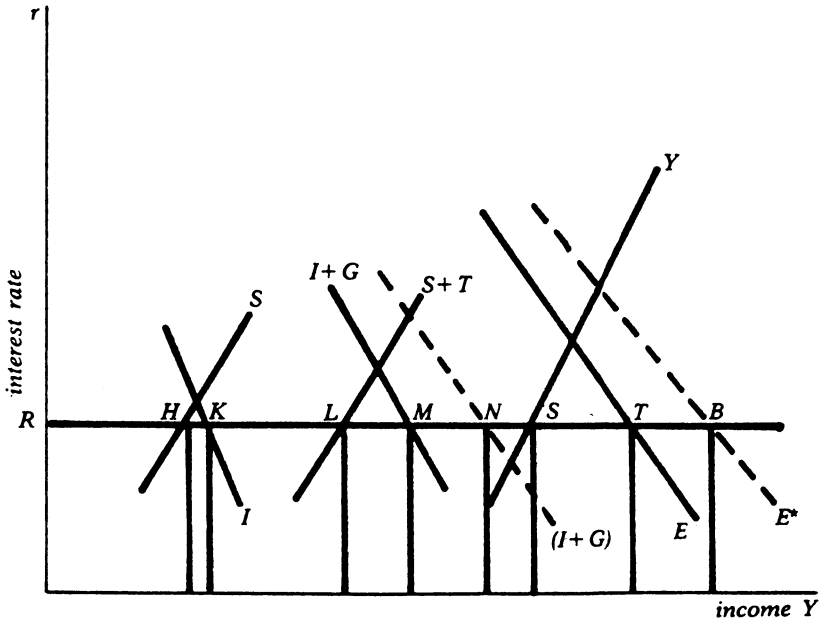
(76) This ignores the wealth effects of the open market operations. As I showed in "The Public Debt, Corporate Income Taxes and the Rate of Interest," *Journal of Political Economy*, n. 68, December 1960, pp. 622-6, reprinted in my *Monetary Theory: Interest, Inflation and Growth in the World Economy*, London, Goodyear, 1971, pp. 5-13, income streams, including tax deductions, can be capitalized to produce wealth effects. In the present case the open market purchases reduce the outstanding stock of securities in the hands of the public, lowering disposable income and wealth, offset, however, by the reduction in the tax liabilities to finance the interest payments on the government debt. As noted earlier, however, the loss of foreign exchange reserves should have some psychic effect on spending becayse of an implicit loss of national wealth, to be experienced through adjustment policies in the future.

4.4 *Budget Deficits*

The analysis in Graph 11 shows how the government sector can be taken into account. The expenditure curve now includes government spending. The trade balance is equal to the difference between both income and expenditure, and the sums of investment and government spending, and saving and taxes. In the configuration shown, at the given rate of interest, there is an excess of investment over saving equal to *HK*, so that the budget deficit is the differences between *LM* and *HK* (= *ST*). From the diagram it can be seen that an increase in government spending that is financed by bonds shifts the expenditure schedule, and also the $(I + G)$-schedule, to the right to positions like E' and $(I + G)'$ increasing the trade deficit by *TB* (= *MN*), from *ST* (= *LM*) to *SB* (= *LN*), and the amount of capital imports by an equivalent amount. Increases in the budget deficit when there is perfect capital mobility cause an equivalent increase in the trade deficit financed by the rest of the world.

GRAPH 11

EFFECT OF CHANGE IN THE GOVERNMENT SECTOR



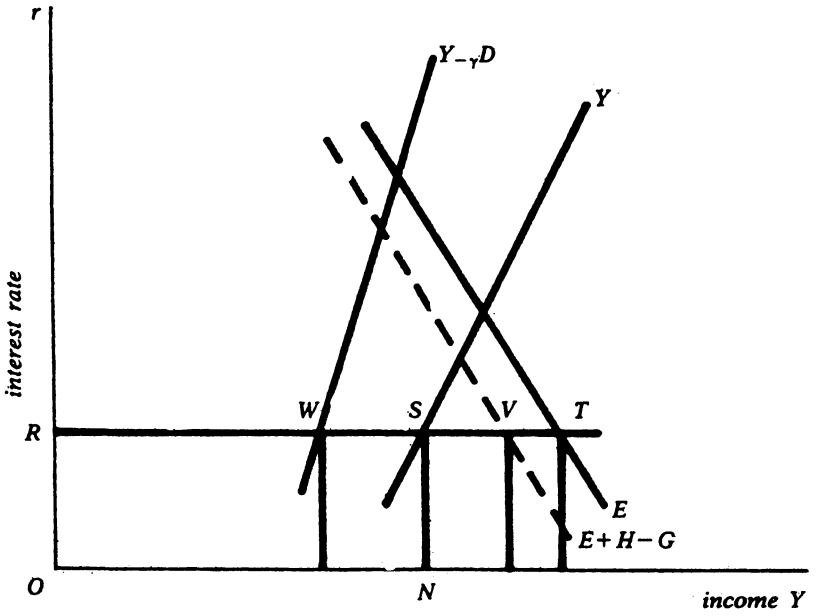
If the increase in government expenditure is financed out of money creation instead of bonds there will be no change in the import of capital from abroad and the increased trade deficit will be financed entirely out of foreign exchange reserves, abstracting from wealth effects associated with the monetary policy.

4.5 *Interest Payments and the Current Account Balance*

Up until now we have not taken explicit accounts of stocks or the level of indebtedness, and we have not distinguished in the diagrams between Gross National Product and Gross Domestic Product, or between the current account balance and the trade balance. In Graph 12, the curve E is the expenditure schedule and Y is the is the supply curve of output. But now we assume the existence of an international debt equal to D so that rD must be paid as annual interest on it. GNP is then $Y - rD$, and at the rate of interest OR outward interest

GRAPH 12

INTEREST PAYMENTS AND THE CURRENT ACCOUNT



payments of *WS* are made. The level of net indebtedness is equal to the ratio *WS/OR*, i.e., the ratio of interest payments *WS* and the rate of interest *SN (= OR)*. The trade balance deficit is *ST* and the current account deficit is *WT*. The balance of payments is determined by the intersection of the *(E + H − G)*-schedule with the interest rate line at the point *V*; the case in the diagram is where $H - G$ is negative so that there is a balance-of-payments deficit equal to *VT*. To summarize, the four major categories of the balance of payments accounts referred to the diagram are as follows:

balance of trade	$= -ST$
interest transfers	$= -WS$ (Item: current account $= WT$)
capital inflow	$= +WV$
balance of payments deficits	$= +VT.$

The categories of course sum to zero.

4.6 *Adjustment to the Deficit*

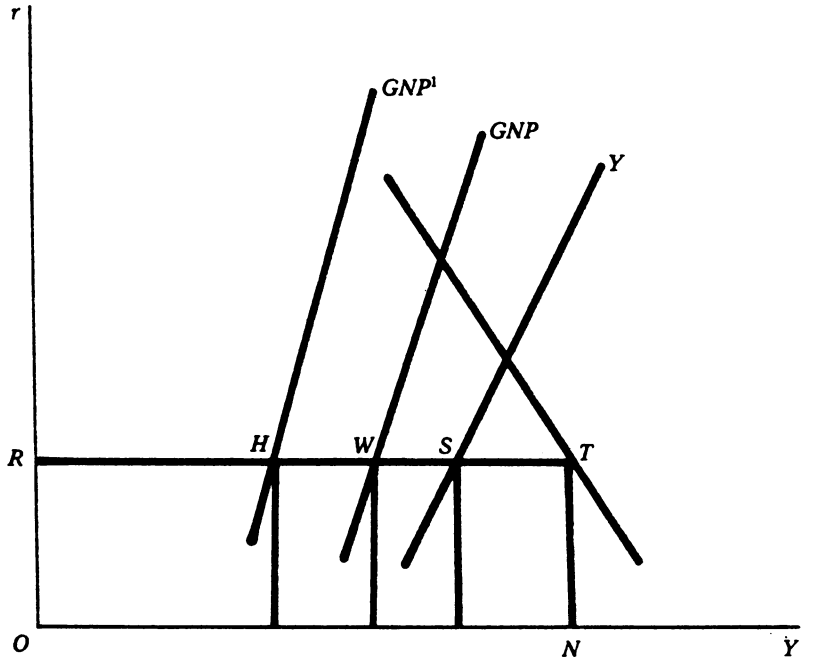
The configuration in Graph 12 cannot be conceived to be more than a temporary equilibrium. The current account measures the rate at which net indebtedness is increasing or foreign exchange reserves are falling. Now let us suppose that the central bank slows the rate at which open market operations are attempting (but not succeeding) to increase the money supply in excess of desired hoarding, so that the balance of payments deficit is eliminated. Thus in Graph 13 we abstract from problems created by the central bank creating either more or less new monetary reserves than are needed for growth so that there is balance of payments equilibrium. The current account deficit *WT* is equal to the rate of borrowing and therefore measures the amount by which the country's indebtedness is being increased. As before the debt is the capitalized value of outward interest payments, *WS/SN*, so that the proportionate rate of increase of the country's indebtedness is:

$$(35) \qquad (1/D)dD/dt = (SN/WS).WT =$$
$$= SN.(WS + ST)/WS = SN.(1 + ST/WS)$$

per unit of time. Because *SN* is the rate of interest, it is clear that as long as the trade deficit, *ST*, is positive the rate of growth of the debt is greater than the rate of interest.

GRAPH 13

GROWTH OF DEBT AND INTEREST



The increase in indebtedness means that interest payments are increasing so that over time the (GNP = $Y - rD$)-schedule is shifting to the left. After some interval let us say this schedule intersect the interest rate line at the point *H*, implying outward interest payments of *HS*, an increase of *HW*. Now it would be foolish to suppose that the output and expenditure curves *Y*, and *E*, as well as the rate of interest required on the debt, are unaffected by the current account deficit, growing indebtedness and increasing interest burden of the debt. But let us imagine for a moment the country were so myopic that the *E* and *Y* curves were unaltered. Then the current account deficit would

worsen from *WT* to *HT*, financed by an increase in capital imports of *HW*, so that the new level, of capital imports is *HT*.

4.7 *Adjustment to the Debt*

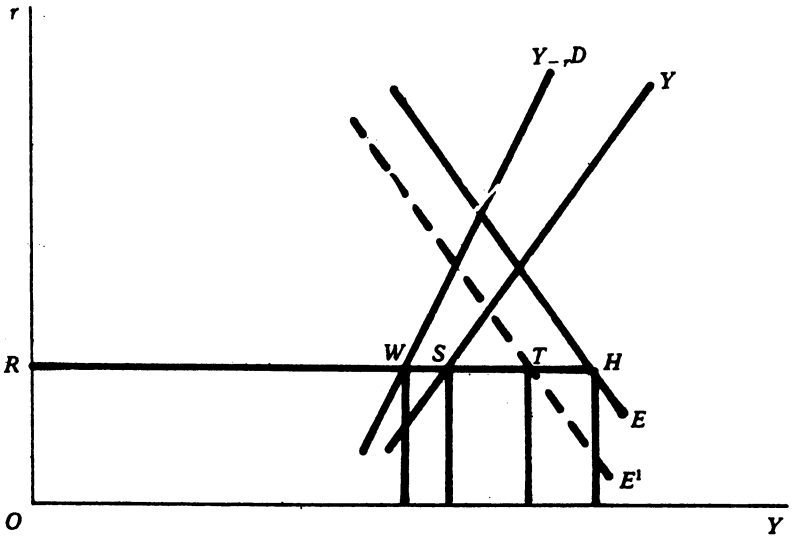
We have now implicity assumed that the additional interest rate payments arising from the increasing debt are financed entirely by new borrowing. This implicit assumption is embedded in the static nature of the *E* and *Y* curves, which up until now have not been adjusted to take account of changes in debt, wealth, or interest payments. But it is immediately apparent that a country cannot ignore increasing debt. The GNP curve would otherwise be shifting constantly to the left until interest payments equalled GDP and GNP would be zero! Long before that eventuality occurred, the country's creditors would have ceased to lend and adjustment would be forced upon the country. The mere anticipation of bankruptcy would be sufficient to compel the necessary adjustment (77).

Both the expenditure and output schedules can be expected to adjust to changes in the debt. In discussing this adjustment we shall abstract from ordinary growth going on as a result of saving and investment in order to emphasize the negative aspects of increasing debt. Expenditure depends on GNP and spending falls with GNP. The ratio between the increase in outward interest payments and the decline in expenditure — the marginal propensity to reduce debt (MPRD) — may be less than, equal to or greater than unity, depending on the total level of debt in relation to wealth. Because rising debt, *cet. par.*, implies lower net wealth and lower future consumption, the conditions of intertemporal equilibrium suggest that the MPRP rises as the debt/wealth ratio rises. The configuration in Graph 14 takes into account shifts of expenditure as interest payments rise due to increasing debt. Thus *ST* represents both the trade deficit and the current account deficit at an initial point when there is no debt. At some interval later as the debt mounts and outward interest payments to service the debt have reached *WS*, the expenditure curve shifts to

(77) A rising probability of default would be met by an increasing interest rate up to a point where new funds dried up. Countries with no recourse to new loans must reduce or close their current account deficits, either by increased output, curtailed spending or both.

GRAPH 14

ADJUSTMENT OF EXPENDITURE



the left to a point like *T*. This narrows the gap between expenditure and output, and reduces the rate at which debt is increasing.

The adjustment of the output schedule to rising debt depends on the changes in the stock of the factors of production, let us say labor and capital. How will labor supply be affected by increased indebtedness? Insofar as the disposable income of labor is reduced by the cost of servicing the debt labor will "consume" less leisure and work harder to reduce the drain on future consumption, assuming leisure is not an inferior good. The *Y* schedule therefore shifts to the right (78).

Similar effects will occur on the side of capital supply. There may be no direct relation between capital imports and investment. Borrowing from abroad for investment purposes may crowd out savings at home. It is more likely, however, that the capital stock will

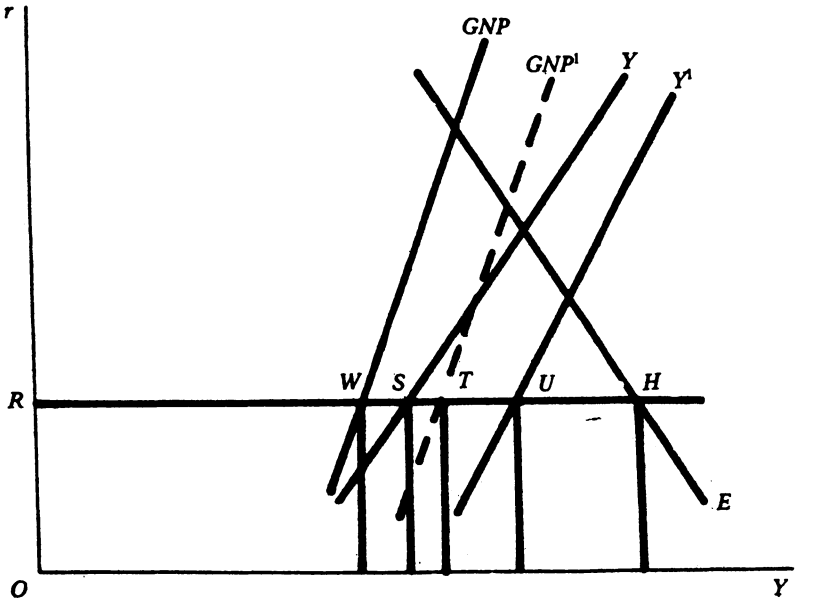
(78) This conclusion would certainly hold up in a one-generation working population. If this assumption is relaxed, however, there will be a tendency for the younger generation to work harder and save more, whereas the older generation may discount future tax liabilities at a very high interest rate.

grow somewhat faster than otherwise if there is ready access to foreign savings. The increase in output represented in Graph 15 shifts the initial supply schedule, *Y*, and the corresponding GNP schedule, to the right to *Y'*, narrowing the gap between expenditure and output and reducing (or reversing) the rate of increase of indebtedness. The trade balance deficit, initially *SH*, is reduced to *UH*; and the current account deficit, initially *WH*, is reduced to *TH*.

Both supply and demand ordinarily adjust simultaneously. It can be seen that the combined action of the adjustment of expenditure and income work to correct and reverse the trade balance. Thus in Graph 16 the initial expenditure and output curves yield a trade deficit of *SH*. But the decline in output with rising debts and service payments, shift expenditure to *E'*. Simultaneously the increases in output shift the expenditure curve to *Y'*. Together the combined effect is to change the trade deficit of *SH* into a lower trade deficit of *TV*.

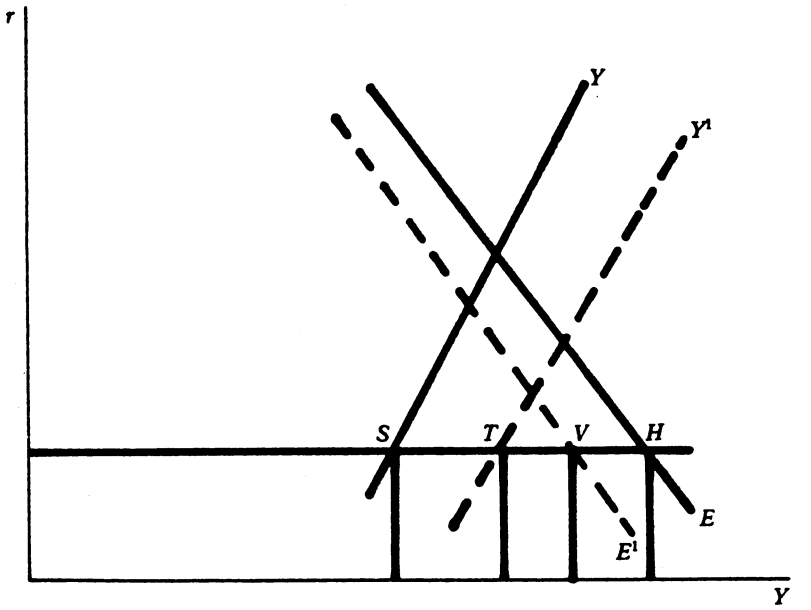
GRAPH 15

ADJUSTMENT OF SUPPLY



GRAPH 16

SIMULTANEOUS ADJUSTMENT



Until there is a trade surplus larger than the amount required to finance the interest payments, new borrowing and increasing debt and interest payments will generate more rapid adjustment until the debt service is fully covered by the trade balance surplus and net borrowing eases. Zero net borrowing would imply an equilibrium level of indebtedness. Whether the process of adjustment will continue so that the debt is increasingly being reduced, depends on the MPRD, which will be governed by whether the marginal efficiency of additional spending is higher or lower than the interest rate.

4.8 *Changes of the Interest Rate for Debtors*

The assumption thus far is that the interest rate at which the country can borrow is constant. This assumption might be plausible at low levels of debt owed by a country with no record or prospect of

default. It is no longer plausible after debt exceeds the debt-carrying capacity of the country.

Even in a default-free situation a large country cannot borrow unlimited amounts at a given rate of interest. Substantial capital outflows strain the lending capacity of the rest of the world. Foreign lending requires an excess of saving over investment, which is limited at any moment of time. The more lending proceeds the greater is the urgency of domestic needs, whether for consumption, government spending or investment, and so the marginal efficiency of capital rises. The same factors that impose limits on the rate of borrowing of a country from the demand side impose limits on the rate of lending from the supply side. Only for a small country can the supply constraints in the lender have only trivial effects.

Graph 17 takes account of rising lending costs. A *T*-curve (not drawn) represents the net lending available to the country at domestic interest rates; it intersects the interest rate axis at the point *W* such that at the interest rate *OW* the rest of the world would be willing neither to borrow or lend. At interest rates below *OW* the rest of the world wants to borrow; and at interest rates above *OW* the rest of the world wants to lend. The *T*-curve is added horizontally to the output schedule at corresponding rates of interest, and it intersects the *Y* schedule at the interest rate *OW*. The *(Y + K*)*-curve is a gross supply curve in the sense that it measures the supply of goods available to the economy, including that financed by borrowing from abroad. The gross supply curve intersects the expenditure curve at the point *H* determining the equilibrium level of borrowing (and foreign lending), the trade deficit and the interest rate.

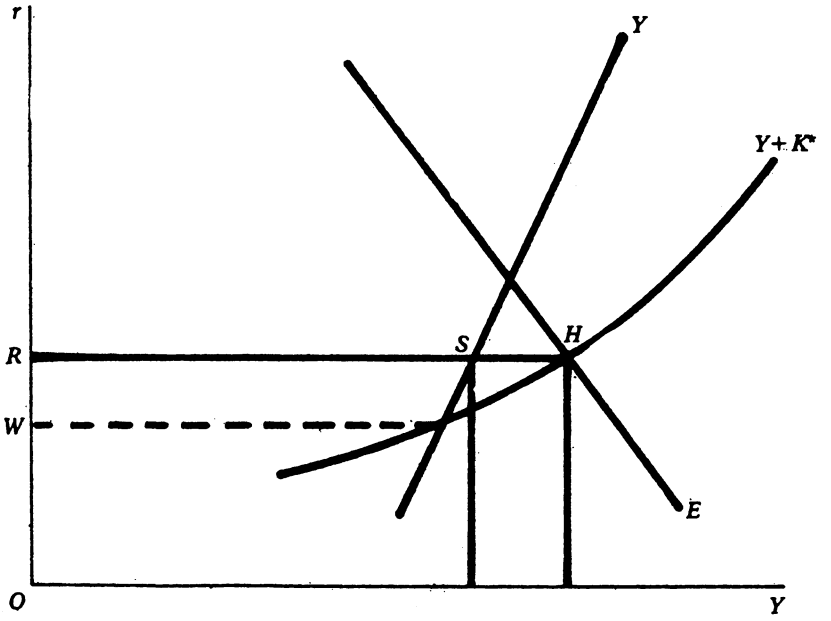
It is easily seen that an increase in the foreign incentive to lend (which implies an increase in the excess of foreign saving over foreign investment) shifts the *(Y + K*)*-schedule to the right, resulting in a lower rate of interest and a larger deficit in the balance of trade.

In an earlier section we have discussed the adjustment to the debt burden by the debtor country. Now we must consider the adjustment from the standpoint of the creditor country. The larger is the debt the greater is the risk of partial or complete default, open or overt, to the lender.

Two kinds of risk need to be separated: currency risk and default

GRAPH 17

ALLOWANCE FOR RISING INTEREST RATES



risk. If the debt is denominated in domestic currency the possibility of devaluation and inflation is present. Devaluation (like inflation) is a partial, implicit default. The greater the risk of partial default through depreciation, the higher will be the interest-rate premium required. Because of devaluation risk (assuming the debt is in the borrower's currency) the domestic interest rate will be higher than the foreign interest rate and the trade deficit will be smaller. It would be a mistake, however, to ignore the fact that if domestic residents also expect inflation and devaluation the *E* and *Y* curves will have shifted upward in proportion to the devaluation risk. Borrowing and the trade deficit will tend to be smaller, the same or larger before the introduction of the expectation of devaluation depending on whether foreign expectation of devaluation are greater, equal to or less than domestic expectations of devaluation.

Given an existing level of indebtdness the higher domestic interest

required in rolling over the debt imposes an additional cost to the country in the form of servicing the debt. The increased risk of devaluation as debt in local currency mounts can play an important role in the adjustment process, especially if the foreign perception of the devaluation risk is greater than the real risk. The cost of servicing the debt rises in real terms if the depreciation does not in fact take place. The trade surplus must be larger to finance both larger debt and higher interest payments (79).

Even if there is no currency risk — and devaluation risk is easily dealt with by denominating the debt in foreign currency — there will be an increasing risk premium due to the possibility of default. The risk premium must rise in relation to the ratio of the debt to debt-carrying capacity, usually GNP, export capacity or wealth. Unlike currency risk, which can in principle be neutral in real terms between foreign and domestic participants, default risk inevitably lowers the available lending and the trade deficit it will finance. In this sense rising default risk accelerates the adjustment toward equilibrium, painful though it may be.

5. - Concluding remarks

5.1 - The price-specie-flow mechanism attributed to the classical economists is a misreading of economic doctrine. It is doubtful that Hume based his adjustment mechanism on changes in relative prices. Viner had complained, for example, that the attribution of the"classical theory" to Ricardo was an error, since Ricardo explicitly rejected it (80). Before Mill there were no major classical economists

(79) In the spring of 1989 the Italian economy presented an example of this dilemma. Interest rates are several percentage points higher than German interest rates, despite the position of the lire in the Ecu. The explanation for the interest difference in a zone of "fixed exchange rates" lies in the possibility of a "realignment of currencies," which means devluation of the lire (and possibly the franc). If Italy were certain the lire would be devalued, say next year, the high nominal interest rates would be low in real terms. If on the other hand it were certain that the lire would *not* be devalued, the high nominal interest rates imply equality high real interest rates, and Italy would be paying a exorbitant rent for new capital. The policy is rational only if the authorities are counting on a future devaluation.

(80) *loc. cit.*, p. 320.

who conceived of adjustment occurring through changes in relative prices, not counting Thornton and Malthus, who were working with short run monetary models and were not in the mainstream of what was considered classical doctrine.

5.2 - The classical economists, following Hume, believed in the law of one price. They accepted the quantity theory of money for the world economy (or an insolated island) or for a country with an inconvertible paper currency. In the case of a country with a convertible currency, however, they argued that an increase in bank credit or paper money would merely drive out specie and not alter the quantity of money. In the sense that the demand for money is still equal to the supply, the quantity theory of money still holds, but the convertibility requirement prevents the quantity of money from changing.

5.3 - Thornton made an important extension to the Hume-Smith argument above, to the effect that the country displacing specie with paper money would increase world prices because of its gold exports. Thornton (81) had the opportunity to witness the fall in the value of gold (inflation) following the French revolution partly caused by the issue of assignats (82) in France which drove out specie.

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(81) Thornton (1762-1815) was a distinguished parliamentarian and philanthropist, one of the founders and sometime chairman of the Sierra Leone Company involved in trade with West Africa, an opponent with his friend Wilberforce of slavery, and was a representative of business among an elite body of men that included William Pitt. Thornton favored a graduated income tax and paid his own taxes according to his idea and not his legal obligation. For an analysis of his contributions to the monetary approach to the balance of payments see HUMPHREY and KELEHER, *op. cit.*, e.g., pp. 61-3, 143-53, 290.

(82) The *assignats*, the paper money issued by the French republic soon after the revolution, were so-named because they were secured not upon specie but upon the confiscated lands of the church and the aristocracy. The first issue carried interest but not subsequent issues.

The French had a previous and disastrous experience with inflationary bank notes, as a result of the company formed by John Law (1671-1729), which had acquired control of virtually all French colonial trade, the French currency and the French debt; Law introduced important reforms in France and in January 1720 became controller-general of the finances. But on May 21, 1720 the government made the fatal mistake of issuing a decree, halving the value of banknotes, precipitating the crisis that goes down in history as the Mississippi bubble.

This example was held up in the French assembly as a warning against paper

5.4 - The Thornton effect has been a major factor in subsequent monetary history. When, in the 1870's, Germany, France and the United States abandoned the silver standard, inflation occurred in the other silver standard countries, including, at that time, Austria-Hungary, Russia, the Far East and much of Latin America. The adoption of the gold standard by those three countries (and many others) created an increased demand for gold that caused deflation in other gold standard countries (especially Britain). An even more dramatic example of the Thornton effect was the credit inflation in Europe after the outbreak of World War I, which sent tens of millions of ounces of gold to the US.

5.5 - The Thornton effect repeated itself in reverse in the middle 1920s when despite the undervaluation of gold caused by the wartime inflation in the US, most of Europe restored the gold standard, putting deflationary pressure on the world economy that the use of foreign exchange in lieu of gold only postponed. The 1930-1934 deflation followed from the fatal decision to restore the international gold standard at a price of gold that overvalued it even in terms of dollars by more than 35%.

5.6 - The Thornton effect reasserted itself again in the late 1950s and early 1960s when the recovery of Europe brought about a renewed desire to increase gold reserves. During this period more than a third of the world's gold stock shifted from the United States to Europe as a result of Federal Reserve sterilization policies. To maintain its 25% gold ratio the United States would have had to follow a tighter monetary policy resulting in a slower rate of world inflation. Rejecting this approach the US maintained its credit expansion during

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money issues, but it was successfully refuted: "Paper money," it was argued before the assembly, «paper money under a despotism is dangerous, it favors corruption; but in a nation constitutionally governed, which takes care of its own notes, which determines their number and use, that danger no longer exists». However, even the French revolutionaries could repeal neither the laws of economics nor the hunger of the fiscal authorities; as a result of continued issues, the assignat fell from par to less than 1/100 of a franc. The land guarantee was no protection partly because the price was not set, and partly because many believed the aristocrats and the church would come back some day to reclaim it.

the late 1960s, leading to the balance-of-payments deficit that ultimately resulted in the breakdown of the Bretton Woods system in 1971.

5.7 - The classical economists rejected the notion that exchange rate changes altered the balance of trade. They argued that devaluation would increase the money supply and the price level, without altering the terms of trade. A fall in the foreign-currency value of a country's currency, can only be achieved by an increase in the money supply at home, and/or a decrease in the money supply abroad. The effect of devaluation must therefore take into account not only the change in relative currency prices but also the effects of the changes in the relative money supplies, that brought devaluation about, on domestic expenditure in surplus and deficit countries.

5.8 - Most of the classical economists took account of the counterpart of the financing of a unilateral transfer from one country to another. Thus they allowed for the extra saving required to finance the transfer in the paying country, and the extra spending resulting from the disbursement of the transfer in the receiving country. Mill was an exception in his belief that the terms of trade of the paying country must decline, and that the latter must bear a secondary burden over and above the primary burden of the transfer itself. Mill's error was in neglecting the demand shifts, a costly oversight that misled his followers. However, Bastable had already refuted Mill's theory in the 1880s and this contribution had been discussed by Nicholson. Thus it was surprising that Taussig would hark back to Mill's erroneous argument and implicate Ricardo, despite Ricardo's explicit rejection of the idea (83). Even after Wicksell had refuted Taussig's treatment, on the same ground that Bastable attacked Mill's, students of Taussig, including Viner, repeated Taussig's error. The changes in purchasing power will bring about shifts in demand — decreases in the payer and increases in the payee — that could change world demand either in favor of or against the paying country.

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(83) It is doubly surprising because BASTABLE'S article *(op. cit.)* appeared in the *Quarterly Journal of Economics*, and because of Nicholson's book which could hardly have escaped Taussig's notice.

5.9 - With non-traded goods, however, there is a presumption that aggregate demand for the goods of the paying country will decline and for the receiving country will increase. In the paying countries resources will shift from the domestic goods industries to the traded goods industries; whereas in the receiving country resources will shift from the traded goods sector to the domestic goods sector. Whether the terms of trade between the two countries will change in favor of or against the receiving country will depend on the resource contents of the shifts in demand. In the case where factor-price-equalization conditions prevail before and after the transfer, the increase in the resource-mix of the receiving country's increased expenditure will exactly equal the decrease in the resource mix of the paying country's reduction in expenditure and factor returns (excepting the tax-cum-subsidy of the transfer itself) will be the same as before and there will be no change in relative prices if marginal demand patterns cancel despite the existence of domestic goods (84).

5.10 - Contrary to the impression left by Taussig and even Viner the classical economists did not subscribe to the Mill-Taussig-Keynes "theorem" that the terms of trade of the transferring country would decline and that there would be a "secondary burden" on the paying country. On the contrary, the mainstream of classical thinking before John Stuart Mill took into account the Ohlin-type demand shifts that made changes in the terms of trade unnecessary or unpredictable as to its direction.

5.11 - The view that unilateral transfers inevitably involved a secondary burden was due to Mill and followed by Marshall, Taussig, Viner and Keynes. Because of their wide influence in the early twentieth century it became erroneously established as the "classical doctrine." The legacy of the Mill-Taussig-Keynes error lives on today

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(84) In the case of specialization in export goods and home goods (which violates factor price equalization conditions) the shift of resources to the domestic goods sector in the receiving country, and the shift to the treated goods sector in the paying country, will increase the scarcity of the receiving country's goods and thus (if not offset by biassed demand changes) change the terms of trade in the Mill-Taussig direction. See above for discussion of the Chipman case.

in the single-entry book-keeping approach to exchange rate devaluation, which ignores the financial counterparts of changes in the trade balance.

5.12 - Financial transfers, including foreign aid, capital movements and interest payments on international indebtedness are driving forces that can be the cause of a country's trade balance. The outward capital movements from the East Asian countries and Germany generated trade balance surpluses in those countries. Similarly US voluntary borrowing finances the excesses of expenditure over income that imposes on the US its trade deficit. The trade balances are driven by capital flows and transfers, not exchange rates (85).

5.13 - The *sine qua non* of the trade imbalances in the 1980s is the high savings level in Germany and Japan, and low savings level in the United States. The US overspending can be partly attributed to its extra defense burden and its failure to balance the budget. But an important (related to the preceding point) role is played by the exceptional attractiveness of US monetary and financial assets in the 1980s (86). The high and continuing demand for dollar assets due to

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(85) Changes in exchange rates can certainly change relative prices in the short run if any prices are fixed. The great fluctuations of nominal exchange rates since floating was adopted in 1973 have led to huge swings in the real exchange rates, largely because wage rates in the largest countries move comparatively slowly, and follow depreciations only with a substantial lag.

Taking 1985 as the base equal to 100 the US's unit labor costs fell, by the end of 1988, to 63.5 whereas Germany's and Japan's had risen to 120 and 141.1 respectively. This represents a reduction in relative US labor costs of 56.5% against Germany's and 77.6 against Japan's. See IMF: *International Financial Statistics*, June 1989, p. 70 (first table). The situaion is not much altered if the other measures of "competitiveness" or "Real Effective Exchange Rates" are used.

The reverse movement had taken place in the early 1980's. Taking 1980 as the base of 100, costs rose to 139.3 in the United States, fell to 90.9 in Germany and rose only to 104.3 in Japan, a swing of relative wage rates of 50% against Gemany and 35% against Japan. See *International Financial Statistics*, Yearbook, 1987, p. 108. A smaller reverse movement had taken place in the late 1970s.

To some extent the fluctuations in real exchange rates can be explained by the great oil shocks in 1973-1974, 1979 and 1985-1986. But a more important factor has been the changes in monetary policy in the United States; it went from ease in the late 1970s to tightness in the early 1980s to ease in 1984-1985 to excessive tightness the months preceding the Stock market crash, followed by ease after the crash.

(86) No better example can be found than the 30-year bonds issued in the United States in 1981-1982 at more than 14% interest.

its role as an international currency give US assets exceptional liquidity and their very attractiveness invites the financial transfers to the US that finance the trade deficit.

5.14 - Correct analysis of the balance of payments requires a general equilibrium approach that fully takes into account *Walras' Law, Cournot's Law* and endogenous capital movements into the balance of payments. One of the weaknesses of international trade theory, as it developed in the classical English tradition, was its failure to incorporate endogenous capital flows. The balance of payments (or balance of trade) has fifteen counterparts each of which must be reconciled in viable economic models.

5.15 - The balance of trade and payments problems of the world today cannot be understood outside the context of the world demand and supply of reserves and national or international assets that qualify as reserves. In a growing world economy the global demand for reserves and other financial assets automatically imposes a balance-of-payments deficit on the reserve-supplying centers. The increase in indebtedness of the reserve center will eventually exhaust its credit and result in inflation, devaluation or outright default.

5.16 - Purchasing-power-parity relationships should be studied in terms of pairs of individual commodities, not indexes of price levels which have different weights. The degree of conformity to the law of one price is a measure of the efficiency of arbitrage in the world economy and an index of the degree to which the gains from exchange have been exploited.

5.17 - Under fixed exchange rate systems, such as the gold standard and the Bretton Woods systems, prices and interest rates, once established in equilibrium, conform closely to changes in purchasing-power-parity. But under flexible exchange rates both interest differentials and purchasing power parities diverge from forward parity and actual exchange rates. This is especially true during the periods of rapid change of exchange rates. This aspect of false pricing

is a defect of flexible exchange rate systems that is not shared by stable, fixed exchange rate systems.

5.18 - Ricardo's penchant for long run analysis led him to a consideration of different points of equilibrium as in comparative statics analysis, whereas others, expecially Thornton and Malthus (87), took into account the transitions between periods of equilibrium. The classical economists, especially Ricardo, were prone to consider increases and decreases in gold reserves as a symptom of disequilibrium, requiring inflation and deflation of expenditure or (in a few cases) changes in relative prices. This would be true in a static economy but it makes no allowance for growth. When a country, on a specie standard, is growing it must import additional money from abroad and thus have a balance-of-payments surplus, if it has no gold or silver mines of its own. Under conditions of balanced world growth, all countries need to increase reserves and therefore have a balance-of-payments surplus, which is possible only if global monetary reserves are increasing; the alternative is deflation.

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(87) Although Hume was not considered a classical economist by his contemporaries he should be included in this connection with Malthus and Thornton because of his considerations, anticipating the multiplier theory, of the transitional effects of changes in the money supply. For this heresy he was taken to task by John Stuart Mill: «Hume... thought that all commodities would not rise in price simultaneously, and that some persons therefore would obtain a real gain, by getting more money for what they had to sell, while the things which they wished to buy might not yet have risen. And those who would reap this gain would always be (he seems to think) the first comers. It seems more obvious, however, that for every person who thus gains more than usual, there is necessarily some other person who gains less. The loser, if things took place as Hume suppose, would be the seller of the commodities which are slowest to rise; who, by the supposition, parts with his goods at the old prices, to purchasers who have already benefited by the new. This seller has obtained for his commodity only the accustomed quantity of money, while there are already some things of which that money will no longer purchase as much as before. If, therefore, he knows what is going on, he will raise his price, and then the buyer will not have the gain, which is supposed to stimulate his industry. But if, on the contrary, the seller does not know the state of the case, and only discovers it when he finds, in laying his money out, that it does not go so far, he then obtains less than the ordinary remuneration for his labour and capital; and if the other dealer's industry is encouraged, it should seem that his must, from the opposite cause, be impaired». See JOHN STUART MILL: *The Principles of Political Economy*, London, Ashley, 1909, p. 551. Mill has in mind a zero-sum game, whereas Hume speculates that temporarily the economy would be bigger.

5.19 - The classical tendency to abstract from economic growth has its modern counterpart in the error of regarding an excess of imports — a trade deficit — as an indication of disequilibrium. The classical economists recognized that unilateral transfers required, and in a sense implied, corresponding trade "imbalances" in order to maintain balance-of-payments equilibrium. The US trade deficit has resulted from voluntary borrowing in the US and voluntary lending in the rest of the world, which can only be effected in real terms by a trade deficit. Devaluation of the dollar, as some American economists propose, to 100 yen and 1.5 marks would not eliminate the deficit if those capital movements persisted. On the contrary, it is possible that an artificial suppression of the dollar would undervalue US capital assets more than at present, raise the marginal efficiency of capital, and provoke an increased inward capital flow and corresponding deficit (88).

5.20 - It is not possible to analyze correctly the effects of "devaluation" or "depreciation" without first specifying the means by which the exchange rate is changed. It is essential to specify also the initial conditions. If the initial position is one of equilibrium under fixed exchange rates, devaluation must mean an increase in the price at which the Central Bank is pegging foreign exchange. This raises the prices of internationally-traded goods and lowers the real value of money balances, increasing saving via the wealth-saving effect and generating the excess of income over expenditure that is implicit in a trade surplus (89). The trade surplus with unchanged capital movements implies a surplus in the balance of payments, an increase in the money supply and eventually a proportionate increase in all prices in proportion to the devaluation. From a position of equilibrium an

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(88) Devaluation would not have this effect in a classical world for the same reason that monetary expansion has no effect on the real interest rate; while capital assets become cheaper in foreign currency, the goods they produce likewise become cheaper, leaving unchanged the return to capital. But in a world where wage rates do not change (by as much as the devaluation) there is a shift along the factor price frontier in favor of capital, raising the real rate of return both in domestic currency and in foreign currency.

(89) This assumes no change in capital movements and no expenditure effects arising from revaluation of international indebtedness.

equi-proportionate increase in the money supply, the price of foreign exchange, wage rates and the price of labor will leave real values unchanged (90).

5.21 - The balance of trade is determined by the relation between income and expenditure and the means by which it is financed. The exchange rate is not likely to be the best instrument to alter the balance of trade. The primary role of the exchange rate is to link national prices expressed in a national currency to those in another. Changes in exchange rates alter the price levels in national currency. In a small open country devaluation, from a position of initial equilibrium, is inflationary; more usually the devaluation is a consequence of past inflation. If in a large not-so-open economy like the US, devaluation of the dollar is brought about by actions in the surplus countries, it will have deflationary effects on the world. But if it brought about by inflation in the deficit country it will be inflationary at home, as in the case of the small open economy. It is better for the surplus countries to ease monetary policies, and for deficit countries to contract; the opposite happened after the *Plaza Agreement.*

5.22 - Exchange rate changes will affect competitiveness if wage rates adjust more slowly than prices. The competitiveness effects flow from the changes in the distribution of income. Appreciation raises real wages, lowers profits and reduces competitiveness; and depreciation lowers real wages, raises profits and increases competitiveness. Exchange rates in the industrial countries since 1973 have moved much more rapidly than wage rates, having a major effect on competitiveness at the sacrifice of net wealth in the devaluing country. The major argument for flexible exchange rates in the early literature was that real wages could be made flexible by exchange rate vari-

(90) For a geometric analysis of the effects of devaluation under these assumptions see my 1965 paper, "Barter Theory and the Monetary Mechanism of Adjustment," *(loc. cit.)*, reprinted as Chapter 8 in my *International Economics (loc. cit.)*, especially p. 122. Even if there is no change in net capital movements a wealth effect from devaluation would arise if the existing net indebtedness is fixed in the currency of the devaluing country. While the debts of the LDC's are denominated in dollars or other major currencies, leaving no advantage to them of devaluation on this account, depreciation and inflation of the dollar will reduce US net indebtedness and also the real value of the debts of the LDC's.

ations even if money wage rates were rigid (91). This is certainly true in the short run, but it is at the expense of a stable monetary system in the long run. Money wage rates eventually catch up to prices and real wage rates recover (and perhaps overshoot), reducing competitiveness and requiring another devaluation "fix" that will maintain competitiveness for shorter and shorter intervals.

5.23 - The monetary system in the age of bimetallism and gold, from say 1803 to 1914, had the merit of preventing serious inflation or deflation in the countries adhering to one or the other or both metals, except for periods of transition when groups of countries were going onto or off one standard or the other. The drifts in the price level that did take place were extremely modest, expressed as an average inflation rate per year, by contrast with our own inflationary experience.

5.24 - The instability of the gold standard during 1914-1918, at least for the United States and Japan, was due to the abandonment of gold by the European belligerents. The restoration of the post-war gold standard was effected at a time when there was a shortage of gold. The reformed gold standard based on an undervalued gold price resulted in deflation, the profile of the deflation being determined by the timing of foreign exchange conversions into gold in the late 1920s and early 1930s. The aftermath of the deflation was a world-wide increase in the price of gold. The correct policy was forced onto the authorities who had resisted it for over a decade. Had the world-wide increase in the price of gold that did take place occurred sooner, say in 1928 or 1930, the great depression might have been avoided.

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(91) In "The Monetary Dynamics of Internatinal Adjustment under Fixed and Flexible Exchange Rates," *Quarterly Journal of Economics*, n. 74, May 1960, pp. 227-57, I wrote: «The argument is based on money illusion: The community is unwilling to accept variations in real income through changes in money prices, but it will accept the same changes in real income through adjustments in the rate of exchange». Other motives for exchange rate changes are as follows: 1) to change the international distribution of debt; 2) to alter the value of domestic debts (including the public debt); 3) to change the price level; 4) to alter the distribution of income and wealth; 5) to acquire seigniorage for off-budget expenditures; 6) to compensate for the removal of distortions; and 7) to prevent distortions in a country doomed to inflationary finance of budget deficits.

5.25 - The mistake made after World War I was repeated after World War II. During and after World War II inflation had again undervalued gold, leaving enough gold reserves for US use, but not enough to rebuild European stocks. In the first stages of the post-war recovery period countries were content to accumulate dollars, which were considered to be as good as gold. But as recovery progressed, and the European nations established external convertibility, dollars were increasingly converted into gold at the US Treasury, draining the US stock, and "forcing" the US to abolish (92) its domestic reserve requirements. The Federal Reserve System was then no longer constrained by its gold reserve requirements and, pressured by the financing requirements of the budget due to the Viet-Nam War, followed a more inflationary policy than would otherwise have been desirable, much to the discomfort of Europe, which thought the US should finance the Viet-Nam War out of taxation. The system therefore broke down. Had the price of gold been raised, or even better, had the Deputies of the Group of Ten agreed upon world central bank or an international currency in the 1960s, the international monetary system might have been preserved. But Europe was afraid that the US might use it to finance US deficits, and the US was afraid that a world currency would replace and therefore weaken the dollar.

5.26 - The system of flexible exchange rates introduced in June 1973 was intended to "nationalize" the inflation problem, letting each country solve inflation in its own way. This was based on the monetarist view that each country's inflation rate under flexible exchange rates, was independent of the others. There is certainly some truth in that view fortunately for economic theory. But the overly simplistic model on which it was based ignored the role of international capital movements, the massive amounts of floating

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(92) From 1934 to 1945 the US gold reserve requirement for Federal Reserve liabilities (including currency and deposits) was 40%; in 1945 it was lowered to 25%. In 1965 the backing behind deposits was abolished, and in 1968 the backing behind Federal Reserve notes (all currency, except for Treasury silver certificates) was abolished. I remember Congressman Henry Reuss, then Chairman of the Subcommittee on International Monetary Reform of the Joint Economic Committee, at a lunch in 1965 expressing his astonishment that the Congress had let the bill pass with hardly a protest!

capital that shift across borders, and the interdependence of expectations in different countries due to instant communications (93). Capital movements represent the dominating force in foreign exchange markets, not the trade transactions stressed by David Ricardo and Milton Friedman. These capital movements have always overshot (94) equilibrium, driving the dollar down too far in the late 1970s, up too far in the early 1980s, and down too far again in the late 1980s, only to find itself, at the time of writing, shooting up too far again.

5.27 - Group of Seven initiatives, starting at the first Louvre meeting, to stabilize exchange rates among major countries constitute a valuable first step in returning to a stable international monetary order. Every country would gain if big movements in exchange rates among the major countries could be avoided (95).

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(93) The *daily* figure for foreign exchange transactions everywhere has been most recently estimated at $422 billion by Haris Makkas of Citibank. One way to measure the problem is to compare the current situation with an ideal state where there is a common world currency and no national currencies. With a world currency there would be no "foreign exchange" transactions. However there would still be cross-border capital transactions. What would be the global value of cross-border transactions under an ideal state of a single world currency? I am not aware of any such estimate.

The annual value of foreign exchange transactions, using Makkas' daily estimate of $422 billion amounts to $126,600 billion for a 300-day year, about five times the dollar value of Global Product. What is the welfare cost of the unnecessary component of these transactions? If each transaction — that would take place even under ideal conditions of a world currency — represented a dead-weight resources cost of 0.1% (1/1000), the cost of our multiple currency system would be $126.6 billion per year multiplied by the fraction by which transactions would be reduced. Assuming this (somewhat arbitrarily) to be 1/2, the cost of the present exchange system, by comparison with a world currency, would be $63.3 billion per year. Of course the redistributional effects of an elimination of the foreign exchange system would have to be taken into account, especially the loss of profits to the banks, the loss of jobs to traders, whose income would be transferred to the rest of the public, minus the lost taxes on their salaries.

(94) In "The Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates," *(loc. cit.)* I developed several dynamic models some of which exhibited the perpetual oscillations that lead to repetitive overshooting. See pp. 164-6 of *International Economics.*

(95) As already mentioned, the real value of the debts of the LDC's would be reduced by US inflation and depreciation of the dollar insofar as their debts are denominated in dollars. If the existing debts were long term, the LDC's would thus benefit by inflationary policies in the US. However, insofar as these debts are short term there would be little gain as short term interest rates would rise; and if inflation again became serious in the United States, the political reaction against it might provoke another tight money crisis like that of 1981-2, leaving the LDC's worse off than before.

5.28 - One of the important developments in the 1990s will be the movement toward European monetary union and the possible development of a Europe-wide currency. This is likely to provoke the usual division between those who want to use the exchange rate mechanism, or the common currency itself, as a vehicle for coordination of policies; and those who want to coordinate policies, including budgets, interest rates and inflation rates, first. The division will play itself out in Europe, with Germany backing the approach of coordination first and then monetary union; and France and Italy the path of monetary integration as an instrument of coordination. Since the Economic Community needs to define well in advance its next target for integration, the European Bank and Currency will be likely targets for integration before the year 2000, and perhaps long before.

5.29 - If Europe embarks on a path to monetary union the United States and Japan (and Canada) will have to take steps to ensure that the rest of the world does not lack an effective and stable monetary system. It is unlikely that Europe can provide much leadership in this direction because its monetary energies will be taken up within Europe. Leadership on the international monetary sphere therefore will have to come from the United States and Japan and the other countries in the International Monetary Fund.

5.30 - In the long run it would be desirable to associate the Soviet Union and China as major partners in a new International Monetary System.

Index

Aaron, Henry 88, 105n
adjustment system, global
  classical adjustment mechanism 403–32, 451–9
  general equilibrium analysis 432–51
  gold standard and its aftermath 351–91
  international adjustment mechanism 391–411
Africa 3, 172, 228, 230
Alexander, S. 127, 141–2, 145–6, 148, 154n, 392n
Allais, M. 38n
Argentina 99
Armstrong, Clement 399–400n
Asia 1–3, 91, 456
Attwood, Mathias 360n
Attwood, Thomas 359
Australia 99, 141, 172n, 230, 360, 382n
Austria 97, 185, 370–1n
Austria–Hungary 351n, 365

Baker, James 2–3, 69, 73, 263–4, 305, 389–90
balance of payments 125–6
  adjustment of 391–432
  composition of accounts 436–8
  deficits 438–51, 457
  elasticity approach to 126–41
  growth and 426–32
  sixteen approaches to 433–6
  see also trade balance
balance of trade *see* balance of payments
Barro, R. 265n, 284, 292n
Barsky, R. 303, 321n
Bastable, C. 140, 154n, 393–4n, 454n
Bayne, N. 259n, 262n, 294n
Belgium 84, 97, 209
Bergsten, C. 151, 154n
Blackhurst, R. 135n, 154n
Bloomfield, A. 316, 321n, 325, 349n
Boughton, J. 282, 292n
Boulding, K. 142n, 154n
Brandt, Willy 202
Branson, W. 51, 55n, 273n, 292n
Brazil 99
Bretton Woods System 3, 62, 64, 94–6, 135n, 137, 200, 203, 207–8, 210, 217, 245–7, 259, 294, 298–302, 306–7, 309, 314–15, 318, 324, 327–9, 332–3, 327, 375–6, 425
Britain 41, 59–63, 72, 74, 80, 98, 137, 141, 172–9, 185, 208, 211, 214, 216, 337, 352, 405–8, 415–16
  and gold 356–72, 380–2n, 400
  and monetary union 84, 97, 219, 221–2, 312
  bullionist controversy 357–8
  fiscal policy 329–30
  inflation 354
  interest rates 299–301
Brittan, S. 318, 321n
Bryan, William Jennings 353
Bryant, R. 271n, 274, 292n
budget deficit 135, 146–53, 441–2
  USA 1, 31, 68–9, 85, 92–4, 103–4, 147–53, 213, 260, 278, 459
Bush, George 76, 200, 391

Canada 2, 72, 111–13, 172n, 230, 342–3, 371n, 464
Cantillon, Richard 356n, 400, 411, 414
capital mobility 45, 47, 432, 436–8, 440–2
capital movements 40–2, 126–7, 129, 138–41, 146n, 340, 430–1, 433, 456, 463
Carter, Jimmy 66–7, 305
Cassel, G. 141, 154n, 352
Chile 99–100
China 62, 101, 208, 210, 353, 363, 464
Chipman, J. 129–30, 132, 134n, 137–41, 154n, 373n, 395–6

Common Agricultural Policy (CAP) 15, 203–7, 228–9
common currency 187, 192–3, 318, 323–4, 344–8
competition 186–8, 190, 215, 334–6
Cooper, R. 302, 321n, 325, 339, 344, 349n
Corden, W. 147, 154n, 292n
Cournot's Law 433–6, 457
credit 29–32, 422–6, 432, 452
Cunliffe Report (1918) 404–5
currency, depreciation of 125–8, 134–5, 137–8, 141–2, 150
  fiscal approach 146–8
  portfolio-balance approach 145–6
  under conditions of Keynesian unemployment 142–5
current-account imbalances 39–40, 442–3
  dealing with 43–7
  desirability of 40–3
  obstacle to international monetary reform 53–4

de Cecco, M. 362, 388n
de Gaulle, General 381
debt 87, 90, 172–9, 440–51
  LDCs 16–18, 87, 98–100, 213, 463n
  third world 16–18, 247–54
deflation 334, 403–4, 424–7, 453, 458
  and gold 358–60, 362–5, 366–72
Delors, Jacques 186
Delors Report 3, 15, 84, 97, 218
Denmark 185
DM 59, 97, 101, 199, 203, 218, 337–8, 343–4
  see also exchange rates
dollar 31, 47–8, 50–1, 53, 79, 82, 84, 90–1, 94–7, 127–8, 334, 337–8, 459
  and the EC 84–5, 199–200, 203–4, 217–18
  and the policy mix 57–76, 206
  coordinated dollar after 1985 389–91
  eurodollar 63–4, 112, 387
  gold-dollar standard: 1934–1971 373–86
  in post war period 304–12
  inflation without gold: 1972–1981 386–8
  strong 102–4, 335–6, 338–9
  see also exchange rates
Dornbusch, R. 131n, 133n, 138n, 145, 154n, 292n, 338n

Eccles, M. 378–9n
economic science 25–37
Einzing, P. 370n
Eisenhower, D. 379n
Emminger, Otmar 83, 384–5n
employment 189–90, 277, 334
  fiscal stimulus and 157–61
    the two-currency customer-market model 161–81
Ethiopia 353
Eurodollar Market 63–4, 112, 387
Europe 160–1, 173–9, 343
  and gold 353, 366, 374, 379–87, 425
  see also European Community; specific countries
European Coal and Steel Community 185
European Commission 188, 197n, 203, 215–16, 220–1, 234–6
European Community (EC) 82–5, 97, 185, 225–6, 347, 388n
  and the dollar 84–5, 199–200, 203–4, 217–18
  basic institutional framework 216–23
  competition 186–8, 190, 215
  farmers 192, 203–4, 215, 228–9
  integrated market (1992) 185–96
  protectiionism 185–6, 189, 203, 225–7, 229–31
  tax harmonisation 193–5, 221
  see also Fortress Europe
European Council 216, 218
European Court of Justice 188, 197n, 215, 220
European Currency Unit (ECU) 83–6, 193, 451n
European Free Trade Association (EFTA) 185, 230–1, 233, 235
European Monetary Cooperation Fund (FECOM) 63, 85, 331

European Monetary System (EMS) 3–4, 13–15, 59, 63, 83–6, 97, 199, 222, 259, 266–7, 298, 312, 318, 343
  origin of 200–4, 215, 217, 329
  predecessors 207–12
  success of 205–7
EMU 464
European Parliament 84, 218
European Strategic Program for Research and Development in Information Technology (ESPRIT) 234–6
exchange rates 12–13, 62, 87–8, 142, 172–9, 194–5, 278–9, 287–91, 312–17, 345
  and interest rate volatility 298–312
  fixed 32, 39–40, 46–53, 60, 95, 192
  flexibility 3, 45, 47, 60, 64, 324, 333–9, 387–9, 460–3
    and elasticity approach 126–41
  floating 31, 46, 52, 59, 63, 87, 95–6, 258–9, 282, 295–7, 324, 326–7, 329–39
  proposals for reform 339–48
  real 44–5, 54, 128, 171
  stability 83–4
  volatility 339–43
  see also Bretton Woods; dollar
exports 129–36, 139–40, 143–4, 146, 395–7, 403–4, 410, 434–6

Feldstein, M. 97n, 105n, 150–1, 154n, 258, 260n, 278, 292n, 305, 321n
Finland 185
fiscal policy 44–54, 74–5, 108, 146–8, 278, 281–2, 329–30, 342, 348
  USA 74–5, 104, 200, 274–5, 329
fiscal stimulus and employment 157–61
  the two-country-market model 161–81
Fischer, S. 265n, 284, 292n
Fisher, I. 303, 321n
Fitoussi, J.P. 159–61, 174–5, 181
Ford, Gerald 65
foreign balance 125, 127, 134–5, 141–3, 146
  see also trade balance
foreign exchange 131–4, 139–40, 331–2, 337–9, 434, 440–2, 463
Fortress Europe 13, 16, 192, 225–6, 236–8
  agriculture 228–9
  anti dumping mechanism 231
  discrimination among firms 231–2
  government procurement 233–4
  least favoured nation principle 230–1
  protectionism 226–7, 229–31
  sensitive manufactured goods 229–30
  subsidies 234–6
  technical standards 232–3
  trade diversion 227–8
  see also European Community
Foster, J.L. 408, 411
France 59–62, 72, 74, 84–5, 95, 97, 137, 186, 193, 200, 203–4, 209–12, 216, 219, 228, 237, 351n, 388, 464
  and gold 353, 357–63, 367, 369–72, 381, 384n, 425, 452
  inflation 205–7, 267
  interest rates 299
Frankel, J. 257n, 258n, 260n, 274–5, 280–1, 292–3n, 304–5, 321n, 339, 349n
Franz, Otmar 84
Friedman, B. 283, 293n
Friedman, Milton 59, 265n, 333, 349n, 463
Froot, K. 305, 321n, 339, 349n
Funabashi, Y. 261, 262n, 293n

GATT 190, 192, 213, 223, 226, 244, 246–7, 375
Genberg, H. 40n, 44, 46n, 48, 52, 55n
Germany 351n, 353–4, 363–4, 367, 369–70, 400, 425
Giavazzi, F. 264, 266–7, 293n
Giersch, H. 186, 192, 197n, 220
Giovannini, M. 264, 293n, 298n, 321n
Giscard d'Estaing, V. 85, 202–3, 266
global imbalances 87–94
gold 47, 58–60, 74, 211, 279–80, 287–91, 324–6, 331–2, 343, 398–400, 403n, 407, 412–14, 422–6, 434n, 453
  standard 60–3, 116n, 208–10, 298–304, 336n, 351–3, 403–4, 409, 425, 461–2

gold, cont,
another inflationary swing 1850–73 360–2
deflationary swing 1820–49 358–60
gold–dollar standard 1934–71 373–6
inflation without gold 1972–81 386–8
inflationary long swing 1789–1819 357–8
long run stability of gold 354–7
post war palliatives and the great deflation 366–72
South African gold and inflation 1897–1920 365–6
swing to gold and deflation 1873–96 362–6
Golden Avalanche, The (Graham and Whittlesey) 374
Goldstein, M. 263, 282n, 293n
Gorbachev, Mikhail 81
Gordon, D. 284, 292n
Gordon, R. 281n, 293n
Graham, F. 141, 154n
Great Depression 89, 158, 265n
Greece 16, 185, 218, 226–8
Gresham's Law 422–3
Group of Five (G5) 246, 257–8, 262
Group of Seven (G7) 96–7, 103, 199, 246, 257–8, 260–4, 267n, 271n, 277–8, 283, 390, 463
growth and the balance of payments 426–32

Haberler, G. 88, 105n, 125–6, 133n, 137n, 155n, 394n, 409
Hansen, A. 133n, 155n
Harberger, A. 142, 155n
Hardouvelis, G. 274–5, 280n, 293n
Harris, J. 356–7
Harrod, Sir Roy 382–3n
Havana Charter 375
Hayek, F.A. 186, 197n
Henderson, D. 226n, 239n
Hicks, J.R. 91, 105n, 157, 168–9
Hindley, B. 231, 239
Hirschman, A. O. 126, 132–3n, 155n
Holland 72, 200
Holtham, G. 266n, 293n
Homg Kong 3, 91, 365n
Hoon, Hian 180
Horiuchi, A. 306n, 321n
Hughes Hallett, A. 266n, 293n
Humboldt, Baron von 360
Hume, David 392n, 395n, 400
adjustment mechanism 406–11, 414–26, 451–2
Humphrey, T. 416–17, 420
Hungary 98n
hysteresis 190

Iceland 185
imports 132–6, 139–40, 142–4, 185–6, 192, 397, 403–4, 409–10, 434–6
inconvertible paper currencies 351, 402
India 208, 210, 351–3, 357n
Indonesia 72
inflation 64, 84, 92, 109–10, 145–8, 189, 270–2, 332–4, 387, 403–4, 409, 423–7, 453
and international policy coordination 264–6
gold and 357–8, 360–2, 365–6, 386–8
in developing countries 98–9
see also specific countries
interest rates 31, 45–7, 108, 144, 158–80, 279, 282, 389, 427–8, 432n, 436–40
and current account balance 442–51
and exchange rates 298–312
see also specific countries
International Bank for Reconstruction and Development 375
International Monetary Fund (IMF) 17, 61, 62, 71, 82, 95, 98–9, 133n, 244–7, 252–4, 262n, 271n, 276, 295, 372–3n
and international monetary reform 382–5
creation of 244–7, 375–8
international monetary system 207–12, 375, 464
history of 323–39
origin of 351–3

reform of 18–22, 39–40, 79–82, 382–7
common currency 318, 323–4, 344–8
current account imbalances 40–7, 53–4
exchange rates 47–54
Kenen proposal 343
key currency monetary coordination 343–4
target zones: The Williamson–Miller proposal 341–3
transactions tax 339–41
International Nominal GNP Targeting (INT) 257–60, 280–91
international policy coordination 257–60
obstacles to 260–80
Ireland 185
Italy 52, 59, 72, 74, 84, 200, 209, 211–12, 267, 351n, 398n, 451n, 464
inflation 205–7, 388

Jamaica 60
Japan 70, 72, 74, 80, 91, 97–8, 103–4, 206, 213, 215–16, 227–8, 230–1, 234, 267, 272, 295–7, 312, 314–16, 318, 323, 337, 343, 347, 365–6, 386, 464
fiscal policy 329–30
inflation 309–10
interest rates 101–2, 300–1, 306–11
monetary policy 343–4
surplus 1, 81, 87–8, 456
Jastrom, R. 354
Jay Cooke scandal 363–4
John Paul II, Pope 95–6, 105n
Johnson, Lyndon 381
Jones, R. 347n, 349n

Keleher, R. 416–17, 420
Kemp, Congressman Jack 66–7, 71
Kenen, P. 261n, 271n, 293n, 339, 343, 349n, 382–3n
Kennedy, John F. 57–8, 63, 67, 380–1
Keynes, J.M. 91, 128–9, 155n, 344, 349n, 359, 369n, 375, 392, 401, 405–11, 419, 421, 455–6
Keynesianism 107–9, 117–18, 168, 170, 333–4
unemployment 142–5, 157–8
Kindleberger, C. 142n, 373n, 376n
King, P. 140, 155n
Klein, L. 128, 148–51, 155n
Kondratief index 354–5, 362, 366
Korea 3, 91
Kravis, I. 89–90, 105n
Krugman, P. 234, 264n 293n, 334–5, 337–8, 347n, 349n
Kuznets, S. 89–90, 105n
Kydland, F. 284, 293n
Lange, O. 433n
Latin America 2–3, 172n, 353, 358
debt 98–100, 247–51
Latin Monetary Union 208–12, 362–3
Laursen, S. 143, 155n
Lawson, Nigel 218
Lerner, A. 126, 133n, 136, 155n
less developed countries (LDCs) 2, 102
debt 16–18, 87. 98–100, 213, 463n
growth 89–90
Lipsey, R. 89–90, 105n
Locke, John 356n, 400–1, 414
Louvre Agreement 70, 74, 264n, 390–1, 463
Luxembourg 84

Machlup, F. 126, 128, 131, 133–4n, 136, 138–40, 146n, 392n
Malthus, Thomas 406, 408, 452, 458
Marshall, Alfred 91, 105n, 133n, 155n, 406, 411, 419, 455
Marshall–Lerner condition 126, 133, 138n
Masson, P. 263, 282n, 293n
McCabe, T. 378–9n
McCallum, B. 282–3, 293n
McKibbon, W. 282n, 293n
McKinnon, R. 259, 282n, 293–4n, 296–7, 321n, 339, 343–7, 349n
Meade, J. 376n, 392n, 409–11
Meltzer, A. H. 332n, 349n
mercantilism 399–403
Metzler, L.A. 143, 155n, 392n
Mexico 2, 98, 365

Mill, J.S. 127, 133n, 155n, 360n, 392–6, 402n, 405–11, 419, 451–2, 454–6, 458n
Miller, M. 259, 278–9, 281–2, 294n, 339, 341–3, 350n
Mitchell, B. 306n, 312, 321n
Mitterand, F. 216, 235
monetarism 107–20, 333–4
monetary policy 45–7, 52, 191, 341–6, 416–17
  and balance of payments 411–14, 432
  and international policy coordination 264–6, 281–3
  and unemployment 157–8
  see also monetarism; specific countries
money supply 35, 46, 110, 137, 142, 270–2, 277–9, 283, 403, 411–26, 434, 436–44
Mulford, D. 261, 262n
Mundell, R. 52, 57, 77n, 107n, 122n, 126, 155n, 170, 181n, 282, 294n, 382–3
Mundell–Fleming model 44–6, 274n
Mussa, M. 304, 321n

Nash equilibrium 257–9, 261, 271
NATO 82, 215
Negishi, T. 145, 156n
New Zealand 100, 172n, 230
newly industrialised countries (NICs) 91
  see also specific countries
Newton, Sir Isaac 356, 401
Nicaragua 99
Nixon, Richard 58, 304–5, 380–1
non-tariff barriers 185–6, 225–6, 233
Norway 185
Nurske, R. 326–7, 349n

Of the Balance of Trade (Hume) 392
Ohlin, B. 91, 392–4n, 405, 408–11, 455
Ohno, K. 303–5, 315, 317, 321n, 344, 349n
oil 64, 248, 330, 347
  shocks 17, 189, 216, 387–8
OPEC 64, 116
Oswald, J. 416–17
Oudiz, G. 275, 294n

Pagano, M. 266–7, 293n
paper money 423–6, 452–3
Pareto, V. 34, 37
Phelps, F. 158–64, 174–5, 181n
Phillips Curve 72–3, 109–10
Pigou, A.C. 408–9
Plaza Accord 3, 257–8, 264n, 389–90, 460
Pohl, Karl Otto 83
Polak, J.J. 138, 141–2, 146–7, 156n
Poland 98n
Portugal 16, 185, 193, 214, 218, 222, 226–8
Prais, S.J. 421n
Prescott, E. 284, 293n
price–specie–flow mechanism 403–4, 417, 451–2
prices 35, 46, 83–4, 333–4, 401–2, 406–9
  change in relative prices 140–1, 144–5, 148, 411–26
  competitiveness (USA) 148–53
  of domestic goods 396–8
  wholesale 302–3
Principles of Political Economy (Mill) 405
producer price index (PPI) 295–6, 314–15, 317
protectionism 42–3, 53, 102, 281, 401
  in EC 185–6, 189, 203, 225–7, 229–31
Purchasing Power Parity (PPP) 295–7, 312–17, 343–6, 457
Putnam, R. 259n, 262n, 294n

R&D 231, 234–6
Razin, A. 143n, 156n
Reagan, Ronald 66–72, 81, 235, 388
recession 219–20
  US 58, 65–6, 88–9, 93–4, 101, 277
Regan, Donald 69, 206
Ricardo, D. 91–2, 169, 201–2, 359, 395n, 406–11, 413–14, 427, 436, 451, 454–8, 463
Robertson, D.H. 91, 105n
Robinson, J. 126, 128–9, 131, 138–40, 142–4, 156n, 322n, 395
Rockett, K. 260n, 293n
Rogoff, K. 265n, 266, 267n, 284, 294n
Romania 98n

Roosevelt, Franklin D. 62, 374n, 378n
Rotemberg, J. 273n, 292n
Rueff, J. 379–80, 405
Russia 365

Sachs, J. 41n, 55n, 259, 275, 282n, 293–4
Samuelson, P. 139n, 156n, 409
Schmidt, H. 85, 202–3, 266
SDRs 47, 58, 60, 74, 329, 331, 382–5
Shiller, R. 337, 349n
silver 60, 208–11, 351, 353, 360, 363–4, 412–14
  standard 356–8, 361, 453
Singapore 91
Single European Act 188
single market 13–14, 185–96, 236–7
Smith, Adam 16, 244, 246, 356n, 400, 423, 452
Snyder, J. 357n
Sohmen, E. 136n, 156n
South Africa 211, 353, 365–6
sovereignty 346
Soviet Union 3, 72, 213, 230, 464
Spain 16, 185, 214, 218, 222, 226–8, 237
Summers, H. 150, 156n
Svensson, L. 143n, 156n
Sweden 100, 141, 185, 398n
Switzerland 52, 74, 103, 185, 200, 209, 375, 388
Swoboda, A. 40n, 44, 45n, 46n, 48, 52, 55n

Taiwan 3, 91
Takeshita, N. 98
tariffs 136n, 229–30, 375, 401–2
Taussig, F.W. 128–9n, 141, 156n, 392–4n, 405–11, 419, 454–6
Thatcher, Margaret 186, 218, 220
Third World 90, 192
  debt 16–18, 247–54
  see also LDCs
Thornton, Henry 406, 408, 423–6, 458
  Effect 374, 452–4
Tobin, J. 334, 339–41, 349n
Tovias, A. 226n, 239n
trade balance 12–13, 125–8, 336
  absorption approach 141–8
  elasticity approach 128–41
  US 148–53
  see also balance of payments
transaction tax 339–41
Treaty of Rome 216
Triffin, R. 326, 327, 350n, 380
Truman, Harry S. 378–9n
Turkey 230, 235

unemployment 12, 35, 109, 127, 148, 159, 167–8, 172, 179, 411
  EC 191, 215–16, 221–3
  Keynesian 142–5
  monetary approach to 157–8
  USA 67–8, 72–4
United States of America 2, 12, 18–19, 52, 58–63, 80, 97–9, 108–9, 114, 119, 127–8, 138n, 141, 172–9, 199–200, 208, 228, 230–1, 245–7, 272–3, 295–7, 314–16, 318, 323, 332, 343, 347, 464
  and gold 353, 362–73
    gold–dollar standard 373–86, 425
  budget deficit 1, 31, 68–9, 85, 92–4, 103–4, 147–53, 213, 260, 278, 459
  current account deficit 40–3, 53, 80–1, 87–8, 90–4, 148–53, 214, 456
  fiscal policy 74–5, 104, 200, 274–5, 329
  inflation 14, 57–8, 63–8, 73–4, 88, 91, 112, 201, 205–6, 267, 309–11, 453
  interest rates 50–1, 57–8, 88–9, 101–2, 112, 205, 299–303, 306–12, 388
  monetarist policy 67–9, 104, 316, 343–4, 387
  recession 58, 65–6, 88–9, 93–4, 101, 277
  stock prices 337–8
  supply side economics 65–7
  tax 58, 67–75
  trade deficit 1, 92–4, 98, 102–3, 305–6
  unemployment 67–8, 72–4
  velocity 111–12, 268–9
  see also dollar
Uruguay Round 16, 190, 192, 226–7, 234, 236–8

Van Horne, J.C. 310, 322n
Vaubel, R. 193, 197n

Viner, J. 141, 156n, 325, 350n, 356n, 358–9n, 393–5n, 407–9, 420, 426–7, 451, 454–6
Volker, Paul 57, 68, 205–6, 216, 266–7n, 388
voluntary export restraints (VERs) 227, 229–31

wages 189–98, 333–4, 397
  nominal 142, 160
  real 12, 127, 144–5, 158–9, 167–9, 172–80, 192, 401–2
Walras Law 407, 433–6, 457
Wanniski, J. 66, 77n
Weber, Max 353
Weede, E. 196, 197n
Werner Report 216–17
West Germany 59–61, 70, 72, 74, 80, 84–5, 97–8, 104, 141, 186–8, 192, 194, 212–14, 219–21, 228, 267, 272–3, 295–7, 314–16, 318, 337, 386, 388–90, 456, 464
  fiscal policy 329–30
  inflation 309–10
  interest rates 101–2, 199–200, 205, 300–1, 308, 311–12, 451n
  monetary policy 343–4
  surplus 1, 81, 87–8, 199, 207
Wheatley, J. 408, 411
Williams, J. 376n
Williamson, J. 218, 224n, 259, 278–9n, 281–2, 294n, 312n, 322n 339, 341–3, 350n
Wilson, R. 141, 156n
Winter, Sidney G. 161–4, 181n
World Bank 62, 99

Young, John Parke 368–70
Yugoslavia 98n