The Open Economy Macromodel: Past, Present and Future

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PREFACE

The impetus for the conference that was the basis for this volume emanated from the influence of two brilliant minds–Egon Sohmen and Adam Klug, who both died at an early age, leaving their families and the professions of economics and economic history with major voids. In the course of research on the origins of Open Economy Macroeconomics, the significant contributions of Egon Sohmen came to the fore. After correspondence with some of those involved in the early development of the Open Economy Macromodel, we turned to Adam Klug for his views on the matter–as he had dealt with the history of intertemporal trade models in his Ph.D. thesis. And it was Adam who suggested the idea of a conference bringing together economists and economic historians.

At this point we want to acknowledge the very generous grant from the Egon Sohmen Foundation and the active participation of Dr. Helmut Sohmen and Mrs. Renee Sohmen at the conference. We also want to thank Prof. Sir Aaron Klug, Nobel Laureate, and the Klug family for their support and the financial contribution of the Adam Klug Memorial Lecture Fund at Ben Gurion University. Other institutions that contributed to the conference were the Gianni Foundation; Bank of Israel; University of North Carolina; Department of Economics, Faculty of Social Science and Aharon Meir Center for Banking, Bar Ilan University; Department of Economics and Faculty of Social Science, Ben-Gurion University of the Negev. We would also like to thank Prof. Michele Fratianni for his kind assistance in obtaining funding from the Guido Carli Association; Prof. William Darity, Jr., UNC at Chapel Hill for his help in obtaining funding; the Chair of Economics, Prof. Nava Kahana, Bar-Ilan, and Prof. Avishai Braverman, President of Ben-Gurion University, for their outstanding support for the Conference Project. Last, but not least, we would like to thank the Dean of Social Sciences and Humanities at Ben-Gurion University, Prof. Jimmy Weinblatt, for his consistent advice and support throughout the project.

Estelle Schulgasser skillfully created one coherent volume from twelve separate and disparate chapters. Without her knowledge this volume would not have seen the light of day.

Arie Arnon Warren Young

INTRODUCTION

This volume has a number of objectives. The first is to assess the "state of play" of the Open Economy Macromodel by bringing together those who developed it with those who apply it today. The second is to assess possible directions for its future development.

Now, over the past half-century, the Open Economy Macromodel, in all its variants, was developed by a dedicated group of economists. Most economists know that Keynes' General Theory was published in 1936. But in the same year Harrod and Meade also published significant works, *The Trade Cycle* and *Economic Analysis and Policy* respectively, parts of which also dealt with the open economy, and interestingly enough, floating exchange rates and "free capital movements". Moreover, by the end of 1936, the early closed economy macromodel of IS-LM vintage had been developed by Harrod, Hicks, and Meade.

The post WWII period, with its concern focused upon international economic theory and policy, saw the publication in 1950, of work by Laursen and Metzler and Harberger; in 1951 of Meade's The Balance of Payments, which influenced a generation of economists, as did Friedman's 1953 advocacy of flexible rates in his now classic *Essays in Positive Economics*. In 1957, Polak's model, introducing the "Monetary Approach" to the balance of payments appeared, and in 1959 that of Hahn; while in 1960 Mundell's crucial breakthrough into "Monetary Dynamics of International Adjustment" was published, and Metzler presented his paper on "international adjustment" from a Keynesian perspective. In 1961 other pathbreaking works were published, including Sohmen's Flexible Exchange Rates: theory and controversy and work by Johnson and Bhagwati. The following period saw the appearance of what Mundell has rightly called the "internationalized IS-LM model," with significant contributions by Mundell himself, along with its popularization by Fleming and Swan, leading to the application of the models and works dealing with their history in the important contributions of McKinnon, Kenen, Branson, Whitman, Bordo, Phelps, and Flanders among others. The present volume brings together the work of economists and economic historians so as to get the broadest perspective on the past, present and possible future of the Open Economy Macromodel in its economic and institutional aspects.

In the introductory essay to the volume entitled "Notes on the Development of the International Macroeconomic Model", Robert Mundell, Nobel Laureate, provides not only a survey of his own fundamental contributions, but a completely new perspective on the development of the

model as he sees it. Mundell deals with the relationship between his own contributions and those of Marcus Fleming, on the one hand, and Egon Sohmen on the other. In this context he discusses the problematic aspect of the linkage between his work and that of Fleming, and also notes the closeness of his own work to that of Sohmen. With regard to Fleming, in his essay, Mundell shows that there was no Mundell-Fleming paper per se, as they "never collaborated on macroeconomics", writing only one joint paper on the forward exchange market. But he does acknowledge a Mundell-Fleming framework for analysis against a unitary model, for Mundell sees his own model and that of Fleming as distinct entities, and in concise and lucid terms, writes about "the relation between the two models."

The volume itself is divided into three parts. Part One focuses the models, men, and institutions involved in the development of the "international macroeconomic model", as Mundell put it. The first paper in this part of the volume is by Jacques Polak. In his paper, Polak deals with what he calls "the two monetary approaches to the balance of payments." Polak distinguishes between "Keynesian" and "Johnsonian" approaches. The former was developed over the 1950s and 1960s by Polak at the IMF, and is thus called the "IMF" or "Polak" model; the latter was developed by Harry Johnson over the same period during his joint tenure at Chicago and the LSE. While the current conventional wisdom treats the models as simply variants on the same theme, in his paper Polak asserts that the models greatly differ with regard to origins, assumptions, and almost all their conclusions. In addition, he is quite critical of the long-run equilibrium analysis of the Johnsonian approach, as it does not enable statistical testing. In his comment on Polak's paper, Yakir Plessner attempts to explain the differences between the two approaches in terms of their treatment of the price level, the link between domestic credit and level of reserves, and the impact of the fixed exchange rate regime that existed at the time the respective models were developed.

The relationship between long-term fluctuations in real exchange rates and inflation is investigated in Peter Bernholz's paper. He takes a comparative historical approach and concludes that high inflation and hyperinflation led to undervaluation of currencies that ended when stable monetary policies were restored. Moreover, Bernholz finds that strong long-term movements around purchasing power parity were a characteristic of flexible exchange rates in the historical cases he presents, as was "overshooting." In the paper, he deals not only with moderate and high inflations, but with hyperinflations and their interaction with overshooting, and in effect has set out an empirical research program to try to explain, as he puts it "what factors may cause the overshooting of the exchange rate" in these cases.

In his discussion of the paper, Nissan Liviatan makes a number of cogent suggestions so as to further the research program set out by Bernholz. He first suggests changing the analytical specification from levels to rates of change.

He then deals with hyperinflations as monetary shocks and refers to the Dornbusch model in this regard. But he then proceeds to focus on what he sees as the "more interesting" exceptions to the "rule," that is, the case of real appreciation and attempts to explain the existence of inflation and real appreciation. He refers to inflation hedges and stabilization programs in the case of chronic inflation as possible explanations. He then suggests that the distinction between demand and cost inflation, that is demand and supply shocks, may also be an explanation, as in the latter case one obtains results opposite to overshooting, concluding that shocks affecting the terms of trade may also give opposite results to overshooting. Thus he concludes that attention should be given to these factors, alongside hyperinflations, where as he puts it "the monetary shock dominates everything".

The establishment of the post-war international monetary system and the role of White, as against Keynes, is the focus of Jim Boughton's paper. He concludes–after surveying White's papers, correspondence, and other documents–that White should be credited for the IMF becoming a "multilateral institution" rather than the US-British "bilateral hegemony", as advocated, in Boughton's view, by Keynes. In his comment, Don Moggridge, editor of the Keynes papers, provides additional material on the development of what Boughton calls the "Keynes Plan," and shows that–as in his economic thinking–Keynes changed the position he took, as distinct from the official British position, in the course of development of his "scheme", as Moggridge puts it, for what Keynes called "international cooperation."

In his paper, Roger Middleton deals with the British problem of juggling between exchange rate and balance of payments situations from the 1949 devaluation to the 1972 float of Sterling after the collapse of Bretton Woods. Middleton shows that even before 1972, British government officials and academics had considered the option of floating Sterling. Indeed, as early as Operation ROBOT (1951-52), the alternative of floating was seriously considered by the Bank of England and the UK Treasury, but was not implemented, the reasons for which Middleton lucidly describes. He shows that after the 1967 devaluation, the idea of floating caught on amongst academic economists in the UK. Subsequently, politicians of both major parties came to the realization that floating was the only feasible option for Sterling, rather than muddling on with a fixed rate susceptible to speculation, and price and incomes policies that had scarred British politics and economics, as Middleton put it. In his comment on Middleton's paper, David Laidler describes stabilizing the exchange rate as "among the goals of monetary policy." Laidler says that such a belief has "not always been commonplace," and the alternatives have sometimes had "a very destructive influence," and thus Middleton's paper and its conclusions comprise a

valuable contibution to the discussion about open economy macroeconomic policy.

We close this part of the conference volume with the first Adam Klug Memorial Lecture, delivered by Mike Bordo, and written by Bordo and Harold James, entitled "Haberler versus Nurkse: the Case for Floating Exchange Rates as an Alternative to Bretton Woods?." In their paper, Bordo and James counterpoint the position taken by Nurkse to that of Haberler regarding floating exchange rates. As Bordo and James note, while Haberler's early work intellectually supported the notion of floating so as to "insulate countries from the transmission of booms and depression," he did not actively advocate floating per-se until the 1950s. At the time of Bretton Woods, Haberler's position was, in fact, close to that of Nurkse, who saw floating as associated with destabilizing speculation and instability based upon the interwar experience. Bordo and James pose the question: "Could there have been an alternative route to 1973?," and try to answer it by analyzing the evolution of Haberler's position on floating. They first deal with his 1930s analysis of the transmission of business cycles under fixed and floating rates and show that while Haberler analyzed the case for floating, he did not advocate it then. They conclude by discussing Haberler's "postwar advocacy of the case for generalized floating" and the possibilities that could have emerged if his position had prevailed. In his comment on Bordo and James, Peter Kenen goes even further by posing a rhetorical counter-factual in the form of "What would have happened in the postwar period if Haberler's [postwar] views had prevailed?", And this, after making the point that Haberler's 1937 analysis of flexible rates was not relevant to a postwar world in which capital movements were prevalent, since Haberler's insulation analysis was based upon the assumption of "no capital mobility."

The second part of the volume deals with the present state of the models. We open with a seminal paper by Ronald McKinnon dealing with Mundell's theory of optimum currency areas (OCAs) and its relationship with key currencies. He reviews the differences between the approach in Mundell's well known 1961 paper on OCAs and that in his "lesser known" 1973 paper on "common currencies." McKinnon's paper addresses the issues surrounding OCA theory on a number of levels:

(i) The debate on the optimum domain of fixed as against flexible rates when currencies are treated symmetrically;
(ii) The stabilizing role of a key currency in an OCA;
(iii) The issue of complete monetary union in securing an OCA internal domain;
(iv) The issue of gain by closely-knit economies via collective pegging to an outside currency.

He then develops a taxonomic analytical framework to show how such issues "are inter-related." In doing this, he develops, among other things, "an

impossibility theorem" for "exchange rate agreements without an anchor". He goes on to develop a further taxonomy for "aggregate demand shocks," distinguishing, as he puts it "diversified industrial economies" from "undiversified economies." In his comments on what he calls McKinnon's "provocative paper" – which brought him "to recast" his "own views about the evolution and relevance of OCA theory" – Peter Kenen reaches "rather different conclusions." He also deals with Mundell's two papers, but in contrast to McKinnon's emphasis on their differences, "was struck by a strange similarity between them," in that they "contemplate a world with little or no capital mobility." Kenen then goes on to develop a framework for understanding these differences and their implications. He takes issue with some of McKinnon's points, referring to his own work on currency unions and policy domains, and has some "serious reservations" about McKinnon's principal conclusion regarding a possible "move toward a rule-based dollar standard", going so far as to say that "no single exchange rate can be right for any country at all times." The importance of McKinnon's paper and Kenen's comment cannot be overstated in a world now divided between "Euroland" and the Dollar.

In their paper on the impact of exchange rate variability on labor markets, Belke, Gros and Kaas focus upon the linkage between unemployment, employment growth and the variability of the effective exchange rate. They find that the linkage exists in "Euroland" and also in the US, but is somewhat weaker in the latter, since in the US employment growth may be insulated from exchange rate variability. They explain this by reference to the stylized facts that not only are US labor markets more flexible than in "Euroland", but that "Euroland" is "considerably more open than the US." In his detailed comments on the paper, Joshua Aizenman concludes that the results are "interesting" as they illustrate "nicely that uncertainty would delay investment", and that the paper "is a very useful reminder that...further attention should be given towards understanding the impact of economic volatility" on the open macroeconomy.

Marina Whitman provides the last paper in this part of the volume, and writes about the interactions between theoretical developments and real-world behavior in the open economy macromodel. Whitman surveys postwar developments in public policy and economic behavior and links them to the postwar elaboration of the model. She then goes on to link the academic writings to business decision-making and draws their implications for government policies. At the end of her paper, she returns to the issue of private versus public, that is to say, collective goods and OCAs in the context of what she calls the Mundell-McKinnon paradox. Whitman concludes by saying that the outstanding problems indicate "the desirability and urgency of economic models that can shed new and more rigorous light" on the issues she raises. She suggests that "stochastic versions of the new open economy

macromodel" such as those of Obstfeld, among others, "hold considerable promise," along with "additional empirical evidence on the impact of exchange-rate volatility on allocational efficiency and economic growth," as seen in the paper by Belke, Gros and Kaas in this volume.

In her comment, June Flanders highlights the comparison made by Whitman between the monetary asset-adjustment approach and the Keynesian analysis, and attempts to explain why the former "suddenly died out in the interwar years of the 20th century." She goes on to reinforce many of Whitman's points by reference to "pricing to market" on the part of firms and the disappointment with floating rates because of the overemphasis on the current account, at the expense of recognizing capital movements and their responsiveness to monetary policy. As Flander's puts it "the disenchantment with floating rates...stems primarily from excessive expectations" of their benefits, and maintains that if the focus is solely on the current account, then flexible rates could provide a buffer to exogenous real shocks. But if the current account and endogenous capital movements, in addition to the internal inflation-unemployment nexus must be dealt with, then, as Flander's writes "exchange rate flexibility" cannot "provide a buffer". She cites Whitman's statement that "if full insulation is a chimera so too is full autonomy of domestic economic policies" in support of her argument. Whitman's paper, in effect, provides an opening perspective regarding the future, alternate models and institutional perspectives, which is the focus of the third part of this volume.

In their important paper, which is part of a larger project to develop an alternative to the Mundell-Fleming approach, Hian Teck Hoon and Edwin Phelps try to explain the relationship between asset prices, the real exchange rate, and unemployment in a small economy via what they call "a medium-run structuralist perspective". In their view, such an approach provides a viable alternative to the standard Mundell-Fleming framework. The Hoon-Phelps model challenges the conventional result of Mundell-Fleming by predicting that a rise in the external rate of interest leads to a rise in unemployment. This is in contrast to the Mundell-Fleming result, where an increase in the external interest rate brings about a real depreciation in exchange rate for a small open economy, stimulating export demand, and expanding output and employment. The model they present not only deals with the external interest rate, but also enables them to study anticipations of a productivity increase and the introduction of investment tax credits. In her comment, Elise Brezis suggest a way to extend the generality of the Hoon-Phelps model by assuming tradable capital goods that are capital intensive or human-capital intensive.

The future of institutional structures necessary to conduct international economic policy is the subject of the final set of papers in part three of the volume. In his paper on the need for reform of international monetary

institutions after the Asian crisis, Freidrich Schneider uses the approach of constitutional economics to make some suggestions for such reform. He proposes the establishment of a new and more powerful and effective International Monetary Institution (IMI) to replace the existing IMF arrangements. In Schneider's view, this IMI must be independent from "major donors." And this, "so that it can act efficiently, if it is 'called' to assist countries" having financial difficulties. In other words, his proposed IMI would, as he puts it, "act like an independent central bank." In Schneider's view, this would permit his proposed IMI to "control monetary policy" and "provide instruments to intervene" in the fiscal policy of the countries that ask for its assistance, in order to more effectively achieve the IMI's goals. In his comment on the paper, Benny Bental takes issue with Schneider's proposed IMI. In Bental's view, market failure was not the reason for the recent Asian crisis; rather, the financial markets actually predicted the crisis. Moreover, according to Bental, after the crisis, the governments of the countries affected acted, in his view, reasonably by, not expanding their money supplies immediately, and only partially monetizing their debt. In brief, Bental suggests that if the IMF be abolished, then financial markets – rather than a more powerful international institution for intervention such as Schneider's proposed IMI – should be allowed to "rule the roost" of international economic affairs.

The final paper in the volume is by Dominick Salvatore, and deals with the future of the international monetary system [IMS]. In this paper, Salvatore deals with the macro-issues involved in designing a viable and politically feasible IMS based upon what he calls a "tri-polar" future system. He first surveys the architecture and operation of the present IMS, and highlights its shortcomings. He then goes on to examine some of the existing proposals for reforming the architecture of the present system. Salvatore then presents his vision of the IMS of the future. After this, he focuses upon financial crises and the architecture of the future IMS, and the relationship between the future IMS and the Eurozone. His vision of the "best possible" future IMS is, as he puts it a "hybrid system, not too dissimilar from the present system, under which balance of payments adjustment is achieved" according to the case specific circumstances of the respective country involved.

In her comment on the paper, Marina Whitman notes that Salvatore's vision may be problematic, especially with regard to the "tri-polar" system he describes. In this regard, she poses the pertinent question: "If the US, the EU countries, and Japan have been unable so far to overcome the internal structural disequilibria that stand in the way of the macro-economic policy coordination essential to avoid large and persistent misalignment of exchange rates, what will make them more willing and able to do so in the future?"

Thus, we have come full circle; from the theoretical issues of the international macroeconomic model dealt with by Mundell and others over four decades ago, to the practical issues of future macro-economic policy coordination in the 21st century. At this point, we would like to thank all those who participated in the conference and who provided papers for the conference volume, and also all those who commented on the papers. We regret that we were not able to publish here all the papers presented at the conference, and the stimulating roundtable discussion on the future of the model, due to reasons of space and other editorial considerations. We hope that we will be able to publish this elsewhere. In light of the present difficult world economic situation, we hope that this volume has contributed something to the understanding of the past and present, and gives some indication and direction towards the development of a future international macroeconomic model.

Chapter 1

NOTES ON THE DEVELOPMENT OF THE INTERNATIONAL MACROECONOMIC MODEL[1]

Robert Mundell
Columbia University

It is a great pleasure for me to take part in this conference on "The Open Economy Macromodel: Past, Present and Future." My comparative advantage today is unmistakably on the "past" component of the sub-title and I shall therefore speak somewhat autobiographically about my role in the development of this model and influences from predecessors and contemporaries and reserve for closing remarks some limitations of the model and opportunities for its use in the future.

I

I have read interpretations of my work that have made stylistic facts about the "early" and the "late" Mundell, the first being a Keynesian, the second, a Classicist. Such periods may be relevant to painters, but are they really applicable to economists? I am not myself aware of any basic shift of direction. I did write on different subjects and use different models at different points in time, but why not? I worked on what came to be called the Mundell-Fleming model mainly over the years 1960-64, but both before, after, and during this period, I was also publishing my work on the pure theory of trade, monetary theory, optimum currency areas, the public debt, the monetary approach to the balance of payments, customs unions and the theory of inflation. The agenda, models and information changed, but the periodization doesn't ring true.

If there was an "early" Mundell, it would have to be the classical one. Let me start as close to the beginning as seems necessary, after I had completed my doctorate exams at MIT in the spring of 1955. A that time I received a

Mackenzie King Traveling Scholarship from Canada and decided to use it to study at the London School of Economics. I had a special interest in the work of Lionel (later Lord) Robbins and (later Sir) James Meade.

I got a nice letter of acceptance directly from Meade, and he agreed to "supervise" my thesis (for MIT) up until March 1956, when he was to leave for New Zealand. I want to discuss my relations with Meade. I saw him in his office about once a week, and also participated in, besides the Robbins theory seminar, the Meade-Robson [Robson was a political scientist] seminar on international economics, as well as lectures by Harry Johnson, who came up from Cambridge once a week to give a course in which he read–yes, *read*–his latest papers. In those two terms I wrote two papers, "Transport Costs in International Trade Theory" (*Canadian Journal*, 1957), and "International Trade and Factor Mobility" (*AER* June 1957), which were two of five chapters of my MIT Ph.D. thesis. The latter article I presented in the Meade-Robson seminar, and I got helpful comments on it from Tadeusz Rybczynski, Dick Lipsey, Max Corden, Steve Ozga as well as James Meade and Harry Johnson. Throughout that year and the following summer in Boston my work was entirely on aspects of the classical or Heckscher-Ohlin theory of trade and I had no discussions about macroeconomics with Meade or anyone else.

I had "read" Meade's *Mathematical Supplement*. In June 1998 Max Corden stayed with me in Siena a few days, and reminded me of a conversation we had at the time. When asked whether I had read Meade's *Balance of Payments*, I replied: "No, but I have read his *Mathematical Supplement*!" This gave me the reputation (along with the prestige of coming from MIT), quite unmerited, that I was a mathematician. One didn't read the *Mathematical Supplement*. It was almost as tedious as the main book. What was exasperating was the taxonomy, roundly criticized by Harry Johnson in his review,[2] Meade has a very amusing footnote on combinations at the bottom of page 33, where he contributes the interesting combinatorial information, confirmed by William Baumol, that there were precisely 28, 781, 143, 379 possible solutions to his model!

Much later, in 1970, during a walk in the foothills of Mount Fuji, Meade told me that he had a mind like Pigou's – a "meat-grinder's mind," he said! He told a story about Pigou on his way out after a lecture being asked by a student if he had not made an error in the sign of an elasticity, at which point Pigou marched back up to the podium to his notes (presumably left for his assistant to return), looked up the relevant section, and simply replied: no! Meade said that he wrote down the equations, differentiated them and reported the results in his book. It wasn't very exciting, but his two volumes and their appendices were nevertheless landmarks in the development of international economic theory.[3]

I learned a lot from Meade, of course. Not macroeconomics, but his brilliant contributions to the classical model. This influence can be seen all

through my "Pure Theory of International Trade" article (*AER* 1960), which was an expansion (and contraction) of two of the five chapters of my thesis. When you asked a question like: How much will a tariff, or unilateral transfer, or productivity change alter the terms of trade (or some other variable), you would find that Meade had produced the first definitive answer to that question. I was able to develop his work in some new areas, develop some of the dynamics, and generalize the model, following up on the pioneering general equilibrium works of Yntema and Mosak, in a multi-country framework.

Nevertheless Meade's *Mathematical Supplement* to the *Balance of Payments* contains the equations of an international macroeconomic model. But when I was doing my work on this subject a few years later, I never made any connections to it, although it must have influenced me at least sub-consciously. The reason, I think, is that my approach came through a Walrasian-like general equilibrium theory, which was at best only implicit in Meade's analysis. There was, however, one important insight in Meade's work that I used extensively in my macroeconomics as well as in my classical "Pure Theory..." article. This was the way in which "domestic expenditure," called "absorption" in Sydney Alexander's 1952 article in *IMF Staff Papers*, was treated as a variable. Of course Metzler and Machlup had used expenditure functions depending on income in their international multiplier work, Metzler and Laursen had made them dependent on income and the real exchange rate in their famous joint article in the *Review of Economics and Statistics*, and Chipman, Goodwin and Metzler had used them in their treatments of the matrix multiplier. But Meade's equations in the *Mathematical Supplement* broke new ground by making domestic expenditure a function of income, interest rates, exchange rates, some prices, and all kinds of policy variables, although he did not develop many of the implications of this novelty.

In his introduction to the *Mathematical Supplement*, Meade says he hopes his "model may somewhat further ... the marriage between the 'classical' and 'Keynesian' analysis of the mechanism of the balance of payments ... What we need for balance-of-payments theory is a marriage of the Keynesian and the Hicksian type of analysis; and our model constitutes such an attempt." I think that does explain what he attempted to accomplish and I think he was partly successful in doing so. It was **not**, however, what I was trying to do in my international macroeconomic model.

Meade had been, since 1950, an ardent advocate of flexible exchange rates and it was was a lively subject of discussion at LSE. He had suggested that the signers of the Treaty of Rome (1956) achieve balance of payments equilibrium for each country by letting exchange rates float. I didn't have a strong position on this at the time but could not see why countries that were in the process of integrating with a common market should saddle themselves

with a new barrier to trade in the form of uncertainty about exchange rates, or how economic theory could prove that flexible rates were preferable to fixed rates or a single currency.

II

My interest in macroeconomics in that year 1955-56 in London was very much beneath the surface, as I was writing a thesis that was entirely a development of the classical and Hecksher-Ohlin models. I spent the following year 1956-57 as the Post-Doctoral Fellow in Political Economy at the University of Chicago and here I became especially interested in the work of Lloyd Metzler in theory and Milton Friedman in policy. Metzler's architectonic "Wealth-Saving and Rate of Interest" in the *JPE* 1950 started me thinking about that model as a more suitable paradigm for macroeconomics than the Keynesian model and worth developing in an international framework. By 1955, Patinkin's work had appeared and the Metzler-Patinkin general equilibrium approach to the closed macroeconomy provided a more classical full-employment counterpart to the standard IS-LM framework.

It was around this time that I shifted research topics from writing about and further refining the pure classical model to thinking about the way to write down the general equilibrium equations for an open economy taking into account monetary variables, exchange rates and capital movements. The fact that Canada had a flexible exchange rate and capital flows between Canada and the United States were significant background influences but there was absolutely no model in the literature that was capable of dealing with the subject. I had a few fruitful conversations with Lloyd Metzler that year that were important. His powers of communication, however, were much reduced after his brain surgery but had he remained healthy, he would surely have pioneered the international macroeconomic model. His 1950 article with Svend Laursen was an important step along the way.

After my year at Chicago, I returned to UBC for the year 1957-58. It was here that I first presented a discussion of "Optimum Currency Areas" at a faculty seminar. That explains the North American flavor of the article. At the same time I wrote an expository piece for a government publication on macroeconomic developments in Canada, and this exercise led me into putting together the basic equilibrium equations for the open-economy macroeconomic model with capital mobility. I was still thinking along these lines when I left UBC for Stanford University for the year 1958-59.

It was at Stanford that my version of the international macroeconomic model really came together. I was teaching the graduate course in international economics and taught my new equations in it; Jeffrey

Williamson surely remembers that class. Equally important was a faculty seminar which I gave, attended by Bernard Haley (editor of the *AER*), Kenneth Arrow, Lorie Tarshis, Ed Shaw, Melvyn Reder, and also Tibor Scitovsky and Abba Lerner who had come up from Berkeley. I had titled the talk, "A Theory of Optimum Currency Areas," but most of it was the Mundell-Fleming model, and it made a big hit. Afterwards, Lerner chided me for not talking enough about optimum currency areas, but I was able to give him the gist of the basic argument in a few minutes after the seminar.

It was at this point that I learned a lesson about marketing. A large number of ideas were put together in a single paper, tied together as special cases of a basic general equilibrium macroeconomic model. It included not only optimum currency areas but much of the comparative statics of the *Kyklos* and *Canadian Journal* 1961 papers, and some of the macrodynamics that became my *QJE* 1960 paper. I sent it to the *Economic Journal* and was disappointed when it came back; (later Sir Roy) Harrod rejected it. But the rejection turned out to be a blessing in disguise! It led to a much more sensible separation of the article into different parts, to become the 1960 *QJE* "Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates," the *AER* 1961 "Optimum Currency Areas" paper, the *Canadian Journal* 1961 article on "Employment Policy and Flexible Exchange Rates," and the 1961 *Kyklos* paper, "The International Disequilibrium System." Ever since, I have advised students and colleagues to stick to a variant of Tinbergen's Rule: one idea, one paper!

Later, when I became friends with Harrod, I teased him about his rejection of my paper, and he explained that he had been going through a very stressful situation at the Journal, sorting out a controversy between Harry Johnson and Don Patinkin over the definition of real marginal cost. He gave up the editorship soon after.

It is necessary now to distinguish between two strains of my models. What is called the "Mundell-Fleming model" is usually taken to refer to that group of articles that includes my *Kyklos* 1961, *Canadian Journal* 1961, *IMF Staff Papers* 1962, and *Canadian Journal* 1963, papers, i.e., chapters 15, 17, 16, and 18, of my *International Economics*, including the appendix to Chapter 18, which was published in the Canadian Journal in 1964. I might note also my article in the *Banca Nazionale del Lavoro Quarterly Review*, "On the Selection of a Program of Economic Policy with an Application to the Current Situation in the United States," published in 1963. This article was the first fully-developed global empirical model of the world economy in a Keynesian framework, a precursor of the forecasting models used by professional forecasting companies like Otto Eckstein's Data Resources and Laurence Klein's WEFA.[4] One of the few references I've seen to this article is by Egon Sohmen in his paper "The Assignment Problem" in the Mundell-Swoboda book, p. 183 and 186. These articles usually thought about as the

Mundell "half" of the Mundell-Fleming model, are more or less in the tradition of the internationalized IS-LM model. It could also be thought of as an international multiplier model generalized to incorporate the securities and money markets.

III

When I first heard the expression, "Mundell-Fleming model," later in the 1960s–it was coined by Rudiger Dornbusch–I supposed it included all my papers on international macroeconomics, including the first one in the *QJE*. It was some time before I realized that my *QJE* 1960 paper "The Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates" (*International Economics* Ch. 11), was not considered part of the Mundell-Fleming model! Yet in some respects this first in the series was the most important and set the methodology for the others.

Its purpose was to find a way to analyze the difference between an economy with fixed exchange rates and flexible prices, and an economy with flexible exchange rates with fixed prices. I needed a coherent and plausible international macroeconomic model that was consistent with a full-employment economy. There was no such model in the literature. The paper introduced an internal balance schedule for an open economy and a foreign balance schedule (for the first time in the literature). The variables were the interest rate (representing monetary policy) and the real exchange rate (or the relative prices of home and foreign goods). The comparative statics of the model could show the effects of expenditure changes on interest rates and the relative prices. The two schedules demarcated four zones of disequilibrium and this made possible an examination of the dynamics relevant to two different policy situations: an economy in which monetary policy was directed at fixing the exchange rate, compared to an economy in which monetary policy was directed at price-level stabilization–in modern language, the choice between exchange-rate and inflation targeting.

To me this formulation–the diagram with the FF and XX curves in a plane depicting the rate of interest on one axis and the real exchange rate (or some other relative price) on the other–fits the world of today better than the variable output versions. Of course it has to be updated to make a distinction between nominal and real interest rates, growth curves along the lines depicted in my *Monetary Theory* (1971), and a more explicit treatment of the relation between capital movements and domestic expenditure to produce Ohlin-type transfer effects.

The model found a new application for economic dynamics. Meade, who had one foot in Marshall, the other in Keynes, had not been concerned at all with dynamics. There were of course precedents in the dynamics. Samuelson

had formulated the dynamics of the Walrasian system, and Lange, Metzler, Goodwin and Chipman, and later Arrow, Hahn, Uzawa and others had added more theorems on its dynamic stability; Metzler and Laursen (1950) had analyzed flexible exchange rates, including a dynamic appendix, in the context of a multiplier model; Hicks had developed dynamics of trade-cycle theory; Metzler (1951) had an appendix on dynamics in his "Wealth, Saving and the Rate of Interest," Patinkin had followed in Metzler's footsteps; and Polak had analyzed some dynamics of an international general equilibrium model. But theorems about dynamic stability had not before been used to settle the choice between economic policy alternatives, and that was one of the novelties of my paper.

When I started writing it, I had no idea what conclusions would emerge. I didn't create the model to elucidate or make appealing to the reader conclusions I had already reached by other means. I used the model as an engine of discovery. I wanted to find out what the mathematical dynamics of the model could teach me. To differentiate the dynamics of fixed and flexible rates, I used the same static model for both. The comparative statics of fixed and flexible exchange systems in my model were essentially the same. But what about the dynamics? At first I thought that the different dynamics of the two systems (fixed and flexible rates) didn't really matter much. From the diagrammatic analysis, it was apparent that the business cycle sequences were inverted. But why should that matter?

Nevertheless, as a student of Paul Samuelson, I routinely derived the stability conditions for the two systems. It turned out that, under normal assumptions, both systems were stable. But that was not the end of it. It was with great excitement–and I remember the very moment on that Sunday afternoon in November 1958 in my Menlo Park apartment, just a month before the birth of my first son–that I noticed that while the stability conditions for fixed and flexible exchange rates were both satisfied, they were different. In particular, the terms under the discriminant determining whether the roots were real or imaginary were *different*. They could be positive or negative, giving rise to either asymptoticity or cyclicity in the path to equilibrium, depending on the sizes of some parameters or slopes. There suddenly spread before me now a whole new world of implications including the "principle of effective market classification." I was so taken with the idea – elated might be a better word – that I put pencil and paper down, to prolong the enjoyment of the suspense about what would, with a little more work, unfold!

One implication of the model was that a domestic boom (shift up and right of the XX curve) would raise interest rates, attract capital inflows, appreciate the real exchange rate, and worsen the balance of trade, a conclusion that would hold under either fixed or flexible exchange rates. This was very relevant to an understanding of the Canadian economy, which was the only

major country with a flexible exchange rate, in the 1950s, and of course later very relevant for understanding the Reagan boom in the early 1980s, and the ERM crisis in the early 1990s. Under the old Keynesian model, which typically assumed capital immobility, it was generally assumed that domestic expansion would weaken the currency.

After the article appeared, I had a nice letter from Harry Johnson, saying something to the effect that it carried the subject to a different level and far away in Buenos Aires, Julio Oliviera wrote to tell me that he was using it already in his classes!

IV

In 1959-61, I taught at the Johns Hopkins SAIS Bologna Center, where I finalized several articles for publication: the AER (1961) "The Pure Theory of International Trade," "Optimum Currency Areas, " the *Kyklos* 1961 article, and the *Canadian Journal* 1961 article. I spent two years in Bologna and thought it was time to get back into the mainstream. The offer from the International Monetary Fund was particularly appealing. When I came to the Fund in September 1961, Marcus Fleming, Chief of the Special Studies Division in the Research Department, was away, and Jacques Polak, head of the Department, suggested that I work on a problem that had come up in economic policy circles in the United States. There was a great debate going in the US government about the use of monetary and fiscal policy, with different approaches suggested by the Chamber of Commerce, the Council of Economic Advisors, and the Keynesians. The Keynesians wanted expansionary monetary and fiscal policies; the Chamber of Commerce wanted tight monetary and fiscal policies; and the Council of Economic Advisers, strongly influenced by Paul Samuelson (President John F. Kennedy's first choice as Chairman of the CEA) and James Tobin, a Member of the CEA, wanted to use monetary and fiscal policy in different directions, with low interest rates to spur growth and a budget surplus to siphon off the excess liquidity. The theory behind the policy mix was called the Samuelson-Tobin "neoclassical synthesis."

When Polak asked me to work on this problem, I replied: "But I already solved that problem in my *Kyklos* article. Polak replied that "not enough people had got the message and I should try again!"

So I took up what was essentially a selling job! The problem was to make the case succinctly, and I hit upon the idea of using the two equations representing policy goals–internal and external balance–in target space, with monetary policy on one axis and fiscal policy on the other. Thus was born the "Appropriate Use of Monetary and Fiscal Policy for Internal and External

Stability." I wrote it in a week, and it was on Marcus Fleming's desk when he returned from his vacation.

David Meiselman, then working in the Office of the Comptroller of the Currency, came over to the Fund to introduce himself and asked what I had been working on. I told him and he asked me what I thought of what I had written. I said that I felt like Bizet, after he had written the Toreador Song to *Carmen*: "If it's trash they want, I'll give it to them!"

Fleming approved the paper, and it circulated as a Departmental Memorandum, which meant that it went to the governments of all the member countries, but most importantly, of course, to the US government. It was an immediate candidate for publication in the *IMF Staff Papers*, but it created quite a fuss. All kinds of objections to it were made: it was "contrary to US policy," it would have a "bad influence on developing countries," there was "no difference between monetary and fiscal policy," the "use of monetary and fiscal policy in opposite directions would cancel out," and so on. Graeme Dorrance, on the Editorial Board, told me he was initially against it for *Staff Papers*, but when he heard the other objections, he changed his mind. What saved it for *Staff Papers* was that the Editorial Board couldn't reach agreement on reasons for rejecting it!

The article provided a new way of thinking about macroeconomic policy. At first it wasn't popular. This was to be expected since it recommended a complete reversal in the current prevailing policy mix. The Samuelson-Tobin neoclassical synthesis might have had some merits in a closed economy, but it was completely indefensible in an open economy on fixed exchange rates.

Fortunately for the United States (and me), President Kennedy reversed the policy mix to that of tax cuts to spur growth in combination with tight money to protect the balance of payments. The result was the longest expansion ever (up to that time) in the history of the US economy, unmatched until the Reagan expansion of the 1980s.

Meanwhile, however, the Federal Reserve Board of Governors had mounted an attack on my paper. Herbert Furth (Gottfried Haberler's brother-in-law) and Robert Solomon wrote a sharp critique. Instead of answering it point by point, I wrote the *Canadian Journal* paper that is usually cited as the locus classicus of my half of the Mundell-Fleming model!

In my IMF paper, monetary policy had a comparative advantage in correcting the balance of payments. The critical assumption was that capital flows were responsive to interest rates. I decided to reply to the Federal Reserve critique by upping the ante, assuming complete capital mobility. This made the opposite policy mix even more absurd, because it showed that under fixed rates and perfect capital mobility, monetary policy was completely impotent. Open market operations to buy Treasuries would result in equivalent gold losses or build-up of dollar balances. The paper was presented at the Spring meetings of the Canadian Economic and Political

Science Association in Quebec, and published in the November 1963 issue of the *Canadian Journal*. This is the article that, as I said, has been so frequently reproduced and is usually cited in the Mundell-Fleming literature. A critical comment on it published the following year provoked me into extending the model to the two-country global context.

V

Meanwhile, Marcus Fleming had been writing his paper, "Domestic Financial Policies Under Fixed and Flexible Exchange Rates," published in the November 1962 issue of *IMF Staff Papers*. This article was later published again in his collected papers on international economics, just following a paper written in 1958 on "Exchange Depreciation, Financial Policy and the Domestic Price Level." The latter paper is entirely in the Bickerdike-Robinson-Metzler-Meade tradition and shows no traces of what came to be called international macroeconomics. But his 1962 paper is an almost fully-mature international macroeconomic model, and this constitutes Fleming's contribution to the Mundell-Fleming model.

The question arises as to the relation between the two models. He had probably been working on his model before I arrived at the Fund, and of course my papers owed nothing to his. He had certainly read my *QJE* 1960, *Kyklos* 1961, and *Canadian Journal* 1961 papers, as well as the paper on the policy mix I wrote at the Fund and which he approved. When he was putting the finishing touches on his own paper in the spring of 1962, he asked me which of my articles I thought he should refer to. I said, why not them all? But he said, "No, I am only going to refer to one of them!" That's exactly what he did! Curiously, he chose the least relevant article to his or my topic–my 1961 *Canadian Journal* paper, on "Employment Policy and Flexible Exchange Rates." (Even more curiously enough, he repeated the reference to this paper alone years later when, in 1969, he published his article on "Wider Exchange Margins" as Chapter 13 in his collection of essays, *Essays in International Economics* (London: Allen & Unwin: 1971).) What must have been going through his mind to single out that paper (which showed that commercial policy was ineffective or counterproductive under flexible exchange rates but no capital mobility) as the most relevant of my papers on monetary and fiscal policy?

There is a difference between our articles that gets Marcus into trouble. On the second page of his article, he examines the effect of an expansionary shift in fiscal policy in the form of an increase in public expenditure under (a) fixed and (b) flexible exchange rates. The increase in expenditure leads, he says, to a deterioration in the current account. Then he writes: "In order to isolate the effect of a change in budgetary policy, it is necessary to assume

that monetary policy remains, in some sense, unchanged. In this essay, that is taken to mean that the stock of money is held constant... ."

But this assumption is not consistent with fixed exchange rates. As I showed in my *Kyklos* 1961 paper, "The International Disequilibrium System," sterilization policy is incompatible with fixed exchange rates, and leads to a "disequilibrium system."

Here is the problem. With a stock of money constant, the increase in government expenditure will increase interest rates, which will check expenditure and lead to an increased net capital inflow. While the trade balance worsens, the capital account improves, and this means that the balance of payments may improve or worsen depending on certain coefficients (in my framework, it will worsen or improve depending on whether the LL curve has a flatter or steeper slope than the FF curve). Fleming now has to conclude with "...if the policy of budgetary expansion results in a deterioration of the balance of payments, shortage of reserves may ultimately lead the authorities to abandon the policy and to renounce the associated expansion in income and employment." His system has no mechanism of adjustment for the balance of payments.

In my earliest works on the model I identified monetary policy with interest rate policy. That was certainly true in my *Canadian Journal* paper and probably explains why Marcus chose that paper to refer to. It makes a starker contrast between our models. Later, however, when I made the assumption of perfect capital mobility, monetary policy had to be redefined and was correctly treated as an open market operation, or a change in domestic credit. The money supply is an endogenous variable under fixed exchange rates.

In my *Kyklos* paper I showed that the balance of payments can be kept in disequilibrium under fixed exchange rates only if automatic effects of reserve changes on the money supply are sterilized, a temporary solution. Had Fleming used constant domestic assets (no open market operations) as the criterion of a constant monetary policy, he would have been able to complete his analysis of the effects of an increase in government expenditure.

VI

I am not quite sure when the term "Mundell-Fleming model" first appeared in the literature. I know the coiner of the term from the horse's mouth: Rudiger Dornbusch. Let me relate a kind of anecdote. At a conference in March 1997 in Claremont, CA, I was objecting to the use of the misleading term, "Marshall-Lerner condition," a term that originated with Charles Kindleberger. The relevant Marshall here is the writer of the *Pure Theory of Foreign Trade*, written in the 1870s, and Lerner refers to the *Economics of*

Control, written in the 1940s. Marshall had of course died (1924) several years before Lerner became an economist (early 1930s) and their themes were quite different. Marshall was talking about changes in relative prices (the terms of trade), while Lerner was talking about the exchange rate. Marshall would have been absolutely horrified at the connection, when he took such careful pains to distinguish between the terms of trade and the exchange rate and to reject any hint of a connection between the stability of his barter model (based on Mill) and the stability of exchange rates. He explicitly made it clear that the reader should not confuse the exchange rate with the terms of trade.

Max Corden then asked me why, if I objected to that connection, did I object to the name "Fleming-Mundell" model rather than "Mundell-Fleming model." I pointed out what I have said above that his work, if not dependent on, at least followed mine, whereas mine was completely independent of his. He had read my earlier papers. That was one of the reasons he wanted me to come to his Special Studies Division in the Fund.

I am by no means suggesting that Fleming's work wasn't in an important sense independent of mine. Mine preceded his in publication but not necessarily in conception. His work was certainly to a large extent, subjectively (to use Schumpeter's phrase) original. You can see a connection in his model to a paper he wrote on macroeconomics in the late 1930s, analyzing a closed economy in a quasi-general equilibrium framework. The problem was something the Fund had to deal with and it was natural that he would have tried his hand at solving it when it had become such a bone of contention in the US The assumptions, style and notation are characteristic of Fleming and have no connection to my work. The notation is completely anti-mnemonic!

Marcus Fleming was a gifted and original economist. He was a "purist" in many senses. Sometimes this trait, combined with his integrity, would get in the way. When he was working at the UK Treasury in the 1940s, he was aghast, Lionel Robbins once told me, to find that the government was accepting the Treasury's recommendations for the wrong reasons. He would rather be right than president!

He could be exasperating to people in his division. A couple of stories, called up from the far recesses of the mind, can be mentioned. I used to go into the office quite early, and stay late, partly to avoid the rush hour. But for an hour or two after lunch I was not to be seen. I was jogging at the nearby Washington Athletic Club! Long after I left the Fund, Ann Romanis told me that Marcus would frequently come to see me after lunch and get in a frightful stew when I was not to be found. At the same time, Ann would come into my office tearing her hair after an intensive discussion with Marcus, usually about "incomes policy."

Despite his predisposition for precision, Marcus considered himself a Keynesian. In the spring of 1963, I presented my "return-to-the-classics" paper, "Barter Theory and the Monetary Mechanism of Adjustment," (Ch. 8 in *International Economics*) at a Fund seminar. This paper would later start a kind of Mundell-Dornbusch literature. It was then that Fleming made his humorous comment that there were only two Keynesians left at the Fund: himself and the Managing-Director (Per Jacobbsen)! Marcus was best at developing and refining fine points and details in abstract theory rather than in the rough-and-tumble and necessarily inexact world of forging new systems.

He really disliked my shift toward classical economics, and in his written comments on it, he penciled in "lament for economics." It never saw the light of day as a Fund paper, and Marcus had the chance to critique it in detail (but unsuccessfully!) when he was its discussant at the 1965 World Bank Conference where I first presented it outside the Fund. It is interesting to note that the literature that came from that paper thus also originated at the Fund, as did my earliest *JPE* papers on inflation theory.

There was no Mundell-Fleming paper. We never collaborated on macroeconomics. But there is a Fleming-Mundell paper, "Official Intervention on the Forward Exchange Market," published in *IMF Staff Papers* (March 1964). Marcus wrote the first draft of this paper and it was his idea to treat the forward market as a stock, rather than a flow market. It's a great idea and it's a pity the article has been somewhat neglected. I developed the diagrams and the explanations. In the exchanges between us, relating to our two-country framework, I replaced his "A" and "non-A" with "A" and "B". We went through this exchange a couple of rounds, but he had the last word. That was my first and (almost) last experience with collaboration!

VII

Now let me say a few words about my relations with Egon Sohmen. I finished at MIT in 1956. I guess Sohmen graduated in 1958. I never saw his thesis, and as far as I can remember, did not meet him until December 1964 at Bellagio, when we were both members of the Bellagio-Princeton G-32 Group organized by Fritz Machlup, Robert Triffin and Willie Fellner. Egon was an advocate of flexible exchange rates, an admirer of Milton Friedman's brand of liberalism as well as his position of exchange rates. The first piece I saw of his – and I'm not sure where it was – centered part of the argument around exchange stability and the theorem, originally developed by Alfred Marshall in the 1870s, that an unstable equilibrium must be flanked by two stable equilibriums. The condition for a stable equilibrium was that the sum of the elasticities exceed unity.

There was always a problem with this analysis that had surfaced earlier with the so-called Marshall-Lerner condition. Marshall's original analysis in the 1870s, a version of which was circulated (but not published) in his 1879 manuscript, *The Pure Theory of Foreign Trade*, made use of the relative price of exports and imports, i.e., the terms of trade, and he warned explicitly against the mistake of equating this ratio with the exchange rate, which was the relative price of two currencies. It would only be related to the exchange rate in the context of an economy where export prices in each country were fixed in terms of domestic currency, a situation that would apply only in a Keynesian unemployment model. An analysis of exchange stability must include explicit markets for two currencies, and there is no reason to believe that stocks of currency demands would be related one-to-one to flows of commodity demand.

I liked Egon, and endorsed his strong advocacy of liberal (in the European sense) economics, and I respected him as an astute economist. When I organized (with Harry Johnson) the Conference on International Monetary Problems at the University of Chicago, he was high on the list of invitees. I had divided the program into a set of twelve problems. Egon Sohmen agreed to write on the "Assignment Problem"–the dynamic matching of instruments to targets–a key issue in the general adjustment problem. This paper was matched with Ron McKinnon's paper on "Portfolio Balance and International Payments Adjustment," and both of course came out in the proceedings of the conference in the Mundell-Swoboda volume, *Monetary Problems of the International Economy*, published by the University of Chicago Press in 1969.

In his paper, Sohmen reviews my contributions with respect to the assignment problem and notes (p. 185 f. of the Mundell-Swoboda volume) that he had come to similar conclusions: "The crucial difference in the effectiveness of monetary policy under fixed and flexible exchange rates was also pointed out in my *Flexible Exchange Rates* (Chicago: University of Chicago Press, 1961, esp. pp. 83-90 and 123-24)."

Sohmen makes a contribution here by linking the discussion of the assignment problem to my theory of optimum currency areas. He fully recognized that a system in which both spot and forward exchange rates were fixed was virtually equivalent to monetary unification, and he recognized that completely fixed exchange rates could work "with no appreciably disastrous consequences, within unified currency areas." He concludes that "The first and foremost "assignment problem" for macroeconomic policy in any country is whether or not it should have its own currency. The degree of factor mobility between regions is probably the single most important criterion for that decision." This conclusion shows that our thinking on the theory of the subject was not very far apart.

VIII

The 1966 conference and its book, in addition to my *International Economics*, published in 1968 did much to launch the international macroeconomic model. The best case that can be made for the model is that for the first time it provided the tools for analyzing the impact of important monetary and fiscal policy changes on large economies interacting with one another. Prior to 1960 there had been no way of analyzing in a rigorous model the effects of monetary and fiscal policy changes on exchange rates, budget balances, trade balances, interest rates, capital flows and exchange rates in the home country and abroad. After the development of that model, analysis of the effects of, say, the US fiscal expansion in the 1980s and the German fiscal expansion in the 1990s became child's play for undergraduates.

This is not to say that the conclusions were applicable to all countries. The Mundell-Fleming framework works best in the context of advanced countries with highly developed capital markets and convertible currencies. It had much less to offer developing countries where capital flows were conditioned heavily by country risk considerations and where currencies were subject to chronic inflationary pressures. My 1964 *Canadian Journal* paper generalizing the model to the world context was the last I wrote in the Mundell-Fleming framework, partly because I had come to the view that small open economies could be best understood in a more classical framework, and to that end it was necessary to incorporate monetary features into the classical barter model.

In a later incarnation, I started to pay more attention to the incentive effects of tax systems and the need to distinguish clearly between fiscal expansion achieved through increases in government spending and fiscal expansion achieved through cuts in tax rates. The success of the supply-side tax cuts during the Kennedy and Reagan administration in the United States contrasted sharply with the indifferent success or failure of the massive increases in government spending in the German economy in the 1990s.

ENDNOTES

[1] Paper presented at the conference on "The Open Economy Macromodel: Past, Present and Future," Israel, 18-21 June 2001. This is a further development of a paper presented at the IMF inauguration of the annual Mundell-Fleming Lecture at the International Monetary Fund, November 9, 2000. Part of that lecture was

originally written in response to some queries about the origin of the international macroeconomic model from Warren Young of Bar-Ilan University in connection with the organization of this conference.

[2] This negative, even harsh review of Meade's book cost Harry Johnson a friendship in Lionel Robbins, who was tenaciously loyal to his friends, and who only agreed to speak to Harry again on the occasion of Arnold Harberger's wedding in London in 1958!

[3] One has to understand Meade's remark in the context of his own innate, self-effacing modesty, just as one would not want to take too literally John Stuart Mill's statement in his *Autobiography*, that he wasn't any smarter than his contemporaries, it was just that he started a generation ahead of them!

[4] Originally, an acronym for Wharton Econometrics Forecasting Associates.

Part I

Past

Models, Men and Institutions

Chapter 2

THE TWO MONETARY APPROACHES TO THE BALANCE OF PAYMENTS: KEYNESIAN AND JOHNSONIAN

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1. INTRODUCTION

In the 1950s and 60s, a number of new approaches were developed with the aim of understanding better the sequences of economic events that could lead countries into balance of payments problems and the policy measures that could prevent or correct such problems. Two places in particular where these intellectual activities flourished were the Research Department of the International Monetary Fund and the Department of Economics of the University of Chicago. The London School of Economics should probably be mentioned in the same breath, in as much as Harry G. Johnson, with whose name these activities are inexorably linked, taught the new gospel in both places as a commuting professor.

By the middle of the 1970s, a considerable body of new balance-of-payments theory and statistical verification had been built up in both Washington and Chicago, and each decided that the time had come for a book that would bring together the results of their respective research activities. The two books appeared almost simultaneously, under the identical title "The Monetary Approach to the Balance of Payments" (Frenkel and Johnson, (eds.) 1976; Rhomberg and Heller (eds.), 1977). The preface to the Chicago book mentions "recent research of the International Monetary Fund" *en passant* as a welcome indication of serious research on the same general range of problems taking place outside Chicago and the LSE – although Johnson had shed a rather different (and no doubt audience-pleasing) light on

the origin of the Chicago monetary approach in a 1971 lecture in Amsterdam: "While the emergence of this new approach has been very largely the work of my colleague R.A. Mundell and our students at the University of Chicago, ... I believe myself ... that its intellectual lineage can be traced back, via Mundell's period of service in the research department of the International Monetary Fund under J.J. Polak, to the 1930s work on monetary equilibrium of the Dutch economist J.G. Koopmans and the subsequent development by M.W. Holtrop and the Netherlands Bank of its practical expression in the Bank's model of monetary analysis." (Johnson 1972a, pp. 84/5.) The preface to the Fund book concludes with a discussion of similarities and differences "between the earlier Fund work and the approach developed in the academic literature of the last decade" (p. 12). The emphasis in this preface is clearly on the similarities, and the inclusion in the book of three papers by Fund staff members with a Chicago or LSE background is seen as a joining of the roots of the two approaches.[2] The basic view that the two approaches are little more than variations on the same theme is continued in Blejer et al., with the academic literature being credited for its 'more refined and robust formulation' (Blejer et al. 1995, p. 710).

After the untimely death of Johnson in 1977, a few attempts were made to reconcile the "Washington" and the "Chicago" versions of the monetary approach to the balance of payments. Helliwell (1978) trawled through a large number of writings by Johnson as well as others of the Chicago school, finding many common sense observations about relations between the real world of output and prices and the balance of payments, beyond the all-pervasive mantra of that school which sees the balance of payments as a uniquely monetary phenomenon. And he, together with Frenkel (Chicago) and Gylfason (IMF), produced an elegant synthesis of the prewar Keynesian with the Chicago monetary approach to the balance of payments (Frenkel, Gylfason, and Helliwell 1980).

Since then, the subject has received little critical comment. While this is no doubt in part due to the fact that the role of monetary elements has been incorporated in conventional macroeconomic thinking (Blejer et al. 1995, p. 715), the lack of attention given to the monetary approach is, nevertheless, a pity. The prominence of that approach in academic thinking for a number of decades, as well as its continued place in the conditionality of the lending policies of the IMF (Polak 1998), justify an effort to explore somewhat further the origin of the two approaches, to compare their analytical structures, and to draw some conclusions on their validity.

With these objectives in mind, this paper presents and appraises, in Section II, the evolution of the Fund's "monetary approach" from the Kahn-Keynes multiplier model of the 1930s, in which no monetary variables appear and which, of course, was all that the profession had to offer in terms of macroeconomic models prior to the arrival of Tinbergen's empirically tested

econometric models. This presentation acknowledges more fully than in Polak (1957) the gradual evolution of ideas on this subject in the literature of the 1930s and 40s. Section III then describes the nature and origin of the "monetary approach" as developed independently by Johnson and his followers. The result of this comparative treatment is a picture of *two* monetary approaches that are distinct both in their origins and in their contents. In recognition of its historic linkages, I shall refer to the Fund approach as the "Keynesian," or the "evolutionary," monetary approach. The "Johnsonian" monetary approach, by contrast, arose from the rejection of Keynesian economics; it was, in Johnson's own words, a "revolutionary" approach (Johnson 1971). To some extent, the differences between the two approaches may be attributable to different policy concerns that inspired the two seminal papers that gave rise to them. The stated purpose of Polak (1957#, p. 15)[3] was to "integrat[e] monetary and credit factors in the explanation of income or of payments developments." The analysis assumed a regime of par values, which were intended to remain unchanged except in the event of a "fundamental disequilibrium." By contrast, Johnson (1958*) was a survey article on recent attempts to study the effect of devaluation on the trade balance, and devaluation remained "the standard question" (Mussa 1976*, p. 187) on which the Chicago School would demonstrate its version of the monetary approach to the balance of payments.[4] That specific objective allowed an approach that disregarded shocks originating in the balance of payments, an essential ingredient in the Polak model. At the same time, the view that in the postwar context – in contrast to the 1930s – devaluation should be analyzed on the assumption of full employment of domestic factors of production was shared by economists in the Fund who wrote on that subject. (See Polak (1948) and Alexander (1952). Johnson's 1958 review paper took the latter paper, which had introduced the "absorption approach" to the analysis of devaluation, as his starting point.)

After the comparison of the two approaches, the paper presents a critical review of the attempts made by their proponents to provide empirical support for their theoretical findings. A final section summarizes the main conclusions.

2. THE EVOLUTIONARY VERSION OF THE MONETARY APPROACH

The 1957 Polak model, in its simplest form, is shown in Box 1. Our interest here is not primarily in that model itself, but rather in its development from Kahn's 1931 multiplier model through a process of "monetization." Three steps can be recognized in this process of monetization: (a) in the

definition of the multiplicand–the autonomous expenditure stimulus that sets off a cumulative process of economic expansion, (b) in the determination of the magnitude of the marginal propensity to spend, and (c) in the determination of the time lag between two successive rounds of spending.

2.1 The Multiplicand

Kahn's presentation of the multiplier process runs in terms of an initial stimulus provided by additional government expenditure on roads. But he makes it clear, first, that the mechanism he analyzes is not confined to expenditure by the government or on any particular asset and, second, that it does assume monetary financing. The necessary funds are not supposed to be raised by taxation but by borrowing, and "the intelligent cooperation of the banking system" is taken for granted so that the money supply will be allowed to expand as needed (pp. 174-5). In the Cambridge approach, "investment" as the autonomous domestic demand factor came to be understood as the sum of private investment and the government deficit, with the latter ennobled as "honorary investment" by Dennis Robertson (cited by Machlup 1943, p. 9).

As pointed out by Machlup (1943, p. 14) any statements about income-creating disbursements can also be expressed in terms of the monetary mechanisms involved, that is, in terms of credit creation and dishoarding. But Machlup sticks to his multiplicand in non-monetary terms. The Polak model, however, introduced the acquisition of domestic assets by the banking system (ΔD in equation (3) below) as the domestic component of the multiplicand. This choice implied that variations in the velocity of circulation of money (hoarding or dishoarding unrelated to changes in income) could be disregarded as minor compared to fluctuations in net credit creation by the banking system. If this is a valid assumption,[5] ΔD in equation (3) in the model would be a good approximation of the sum of all relevant domestic expansionary factors: business investment, to the extent that it was not self-financed or financed from the proceeds of shares and bonds sold to savers; consumer expenditure financed by bank credit; and government deficit spending financed by the banking system.

ΔD (or DCE, "domestic credit expansion" as it became known in the discussions between the Fund and the monetary authorities in the United Kingdom) also happened to be a variable to which monetary economists, following the work by Triffin on Latin American banking statistics, had paid a good deal attention in the 1940s. *International Financial Statistics*, the statistical monthly that the IMF started to publish in 1948, organized each country's consolidated banking data in a "monetary survey," patterned on Triffin's dichotomy of money of domestic origin (domestic credit creation)

and money of foreign origin (international reserves). Even at that time, data to produce these "surveys" were available in almost all countries, with a lag of only a few weeks, from the balance sheets of commercial banks, which most central banks collected and presented in a consolidated format.

Box 1. The Fund Model in its Simplest Form

The model consists of two behavior equations and two definitional equations:

$$MO = kY \quad (1)$$

$$M = mY \quad (2)$$

$$\Delta MO = \Delta R + \Delta D \quad (3)$$

$$\Delta R = X - M + K \quad (4)$$

where
MO = money supply;
Y = GNP;
M = imports;
R = reserves;
D = domestic credit of the banking system;
X = exports;
K = net capital inflow of the nonbanking sector;
k = the inverse of the velocity of circulation;[6] and
m = the marginal propensity to import.

No explicit lags are shown in the behavior equations, but the model acquires its dynamic character from the fact that while the flow variables in it (Y, M, X and K) are measured as totals over the unit period selected, the stock variables (MO, R and D) are measured as amounts outstanding at the end of the period. Thus, combining the four equations shown above:

$$\Delta Y = 1/k[\Delta D + X + K - mY] \quad (5)$$

Where the time series for the three exogenous variables ΔD, X and K determine the development of Y, MO and M over time.

In an open economy, autonomous impulses coming from abroad typically dominate fluctuations in national income and it was natural, therefore, that practitioners of the multiplier approach from a small country originated the idea of including them. In an empirical study of the national income of Australia, Clark and Crawford (1938) presented a multiplicand which was the

sum of four elements: private investment, the government deficit, exports and import replacement (that is, changes in imports not caused by changes in income).[7] A few years later, Machlup (1943) worked out a broad range of numerical examples of multipliers applied to changes in both home investment and exports.[8]

These strands are found back in the Fund model, where the multiplicand was developed as the sum of domestic credit creation, exports, and capital imports – a combination for which Fleming created the appellation of "gross money creation" (Fleming and Boissonneault 1961#).

2.2 The Marginal Propensity to Spend

Kahn's multiplier was based on estimates for two behavior coefficients: the marginal propensity to consume–based on a weighted average of the marginal propensities to consume of workers and entrepreneurs, and the marginal propensity to import. Angell (1941) and Metzler (1942) added "a marginal propensity to invest" to capture secondary investment effects, thus broadening Kahn's first propensity into a "marginal propensity to spend." This change affected the multiplier analysis in a number of ways.

First, it removed the expectation of a geometric decline in successive spending rounds, since the marginal propensity to spend might well equal, or perhaps exceed, unity.[9] Indeed, if one assumes – as is typical for many developing countries – that bank credit is rationed, there should be every incentive for savers and investors to seek ways for the savings of the former, beyond the amounts desired as additions to their holdings of money, to flow into additional investments.

Second, the merger of a marginal propensity to consume and a marginal propensity to invest makes the concept of a marginal propensity to save irrelevant from the point of view of the multiplier process. There is, however, room for a "marginal propensity to hoard" which expresses the stock demand for money as a function of the flow of income.[10]

Third, if the relation between money and income is one of proportionality, that implies a marginal propensity to spend of unity.[11] But because the adjustment of expenditure to income is not instantaneous, saving-in-the-form-of-money during that adjustment equals spending-below-income.

Although Kahn's estimate for the marginal propensity to consume in the United Kingdom in the depression is far below unity (in large measure because he assumes that the government will not spend the "savings on the dole" and the extra tax revenue), he does also consider the effect of a propensity equal to 1. He combines this with the assumption of a closed system (that is, a system without an import leak) to conclude that the ratio of secondary to primary effects would then go to infinity. In those

circumstances, Kahn writes, "one man put to work on the roads would then place all the remainder of the unemployed into secondary employment" (p. 184, repeated verbatim on p. 190).

2.3 The Multiplier Process over Time

Kahn does not address the multiplier process period by period but considers only "the final position of equilibrium when everything has settled down." He admits that "because wages and profits are not spent quite as soon as they are earned, some time will, of course, elapse between the point when the primary employment begins and the point when the secondary employment reaches its full dimensions" (footnote 2 on p. 183).[12] To define the multiplier process over time requires estimating the lag between one income round and the next, through consumption expenditure, retail and wholesale restocking, the flow (perhaps through intermediaries) of savings into investment expenditures, and increases in production and employment in both the consumption goods and investment goods industries. Since the microeconomic information necessary to estimate this lag is not available, a number of authors have tried to answer this question with the help of monetary statistics.

The first to do this was J.M. Clark (1935, pp. 96–99). He starts out from a figure of about 1.6 for the cyclical average for the (annual) circuit velocity of money in the United States, which might correspond to a marginal figure of about twice that size in a pronounced cyclical upswing brought about by an expansionary fiscal policy. This leads him to a rough guess of the income-to-income lag of about three months. Machlup estimates, in a somewhat different way, a "marginal income propagation period" (which he assumes to be equal to the average period) for the United States, which also works out at three months (Machlup 1939, p. 10).[13] Polak (1957) uses the inverse of the average annual income velocity of money as the length of the income period, which he calculates for a large number of countries.[14]

Further work on the model made clear, however, that this third monetary innovation applied to the Kahn model lacked a solid microeconomic foundation. It implies that next-round spending for each household or business starts only after it has accumulated the full amount of money it desires to hold in the light of the increase in its income or turnover. But it seems highly unlikely that a household or a business would opt for the corner solution of giving total priority to the adjustment of its stock of money to its new income level over making any increase in its level of expenditure. A more general approach would be to assume that each agent would use part of its new income to raise expenditure and the remainder to initiate a partial restoration of its liquidity ratio. This was the approach developed by Prais

(1961). He added to the Polak model an equation explaining domestic expenditure (E), which incorporates the concept that both the stock of money and expenditure are adjusted gradually to their desired levels as functions of income (see Box 2).

Box 2. Expansion of the Fund Model to Incorporate a Gradual Adjustment of Money to its Desired Level as a Function of Income

A new variable E (for expenditure) is introduced, defined as

$$E = Y - X + M \qquad (6)$$

and a new behavior equation relating E to Y by means of a unitary marginal propensity to spend, but adjusting E by a fraction *a* of *the difference between* actual and desired money holdings:

$$E = Y + a(MO - kY) \qquad (7)$$

Note: Equation (7) combines Prais's equations (1) and (3) (not shown here) with the symbols adjusted to those used in Box 1. See Prais 1961#, p. 148.

The effect of this change in the model was to lengthen the time taken to adjust the stock of money to its desired level, and accordingly to speed up the adjustment of income and imports and reduce their lag behind the autonomous expansionary factors. Prais stated his conclusion in somewhat cryptic terms ("The slower adjustment of liquidity has the consequence of giving greater weight to current exogenous elements in determining current imports, at the expense of preceding values" (p. 158)), which may help explain why it was overlooked by others in the Fund (see below).

3. JOHNSON'S MONETARY APPROACH TO THE BALANCE OF PAYMENTS

In contrast to the evolutionary development of the Kahn-Keynes model described in the preceding section, Johnson presents his monetary approach as "revolutionary," more specifically as a counterrevolution to the Keynesian revolution (Johnson 1971). Having begun his academic career as a Cambridge Keynesian, Johnson, by the mid-fifties, had become disillusioned with the intellectual climate at Cambridge, moved to the University of Manchester and distanced himself from orthodox Keynesianism (Laidler 1984, pp. 595–98). The 1958 paper referred to above was written in this period. His discovery of the monetary approach as a completely new starting

point for balance of payments analysis seemed to have had the liberating force of an epiphany.

In embracing this approach, Johnson and his followers shook off some of the attributes of the Keynesian orthodoxy, such as 'the assumption of mass unemployment' or the "elasticities approach." Johnson himself, moreover, sometimes displayed a strong personal anti-Keynes animus.[15]

In the Johnsonian revolutionary version of the monetary approach, money is not brought in as a contributing factor in the explanation of the balance of payments. It enters at the very beginning of the story, as a kind of anti-Keynesian manifesto. Thus, the first sentence of the Introductory Essay by Frenkel and Johnson in their *Monetary Approach to the Balance of Payments* (1976*, p. 21) reads: "The main characteristic of the monetary approach to the balance of payments can be summarized in the proposition that the balance of payments is essentially a monetary phenomenon." The "essentially monetary" epithet made its first appearance in Harry Johnson's (1958) "basic article" (to use the Chicago volume's description of this paper) on the subject, where it appears three times, with the conclusion that "[f]ormulation of the balance of payments as the difference between aggregate payments and aggregate receipts thus illuminates the monetary aspects of balance-of-payments disequilibrium, and emphasizes its essentially monetary nature" (Johnson 1958*, p. 51). That was long before Mundell moved to Chicago, indeed before he joined the Fund staff in 1961 – which suggests that Johnson's genealogy of the Chicago monetary approach cited in the Introduction was unduly modest.

The "essentially monetary phenomenon" mantra reappears as the mandatory point of departure in the writings of many of Johnson's followers. Thus, for example, Mussa (1976*, p. 189) in a section carrying the magic words as its heading: "The official settlements balance is in surplus (deficit) when the monetary authorities of a country are purchasing (selling) foreign exchange in order to prevent their own money from appreciating (depreciating) relative to other monies. Thus, analysis of the balance of payments only makes sense in an explicitly monetary model, and, in this sense, the balance of payments is an essentially monetary phenomenon. Or, to give the point a more provocative tone, analysis of the balance of payments in as theoretical framework where money is not explicitly present is, prima facie, nonsense."

Note that what is new here is not the behavior equation that expresses the demand for money, and which has its place in Keynes's writings as well. The new discoveries are the definitional equations referred to above, the balance of payments equation and the balance sheet of the banking system. It is perhaps hard to see anything new in these – until one acknowledges that the traditional Keynesian approach washed these two definitional equations out of its system by its assumptions with respect to policies. Kahn, for example,

expects the additional imports caused by public works to have their effect on net foreign lending by the United Kingdom, via a modest rise in interest rates, not on the level of reserves, and hence by implication on the money supply–assuming the government did not counteract the trade effect by restrictions on foreign lending or the imposition of tariffs (1931, pp. 193, 195–196).

Kahn's assuming away the effect of increased imports on reserves was perhaps unusual, but British economists routinely assumed away the effect of changes in reserves on the money supply. Meade's assumption of a "neutral economy" as the basis for the discussion of economic shocks may be cited as typical for this approach. "We assume ... that the banking system must be prepared to expand (or contract) the total supply of money to the extent necessary to prevent any scarcity (or plenty) of funds in the capital market which may be induced by any other disturbing factor, from causing a rise (or fall) in interest rates" (Meade 1951, p. 48). Johnson's criticism of the Keynesian model was specifically directed against the "basic assumption on which this [Keynes's] system of balance-of-payments analysis rests, ... that the monetary consequences of balance-of-payments surpluses or deficits can be and are absorbed (sterilized) by the monetary authorities so that a surplus or deficit can be treated as a flow equilibrium. The new ['monetary'] approach assumes–in some cases asserts–that these monetary inflows or outflows ... are not sterilized–or cannot be, within a period relevant to policy analysis–but instead influence the domestic money supply" (Johnson 1972, pp. 152–3).

By rediscovering the "essentially monetary character" of the balance of payments, Johnson and his followers went, however, well beyond rescuing the two "money identities"–equations (3) and (4) in Box 1–from the neglect they had suffered at the hands of the Keynesians during the 1940s and 50s, especially in the United Kingdom and the United States. They introduced a new causal approach to the balance of payments, namely "that it is the expenditure of unwanted cash balances that leads to the import surplus and the corresponding outflow of gold" (Johnson, 1972b, p. 91), criticizing Hume and Viner for failing to make this clear. Or as restated by two of his followers: "In the framework of the monetary approach, the balance of payments position of a country is considered to be a reflection of decisions on the part of its residents to accumulate or to run down their stock of money balances" (Aghevli and Khan 1977#, p. 275). These are not formulations of an intuitively obvious proposition, even if one assumes that economic agents determine the amount of money they want to hold on the basis of a simple and stable function of a limited number of variables. The proposition linking excess holdings of money to the balance of payments does not stand for a behavior equation, but rather for a reduced form equation that traces the

effects of an initial creation of money through a complete model of a country's economy.

In sharp contrast to the evolutionary monetary approach, which considers (as we saw) credit creation as a measure of domestic autonomous demand, the Johnsonian approach can only be understood if one assumes that credit creation has no impact on the demand for money, at least in the long-run equilibrium situation that will establish itself after the effects of the credit creation have fully worked themselves out. For that longer run, the approach assumes: (i) conditions in the labor market that will restore the economy to full employment, assuming the initial shock has moved it some distance above or below that level: (ii) conditions in the goods markets ("the law of one price," all goods considered tradable) that ensure that prices in the country experiencing the shock stay at the world level (or return to that level, if they are temporarily pulled away from it); and (iii) conditions in asset markets ensuring the equality of domestic and foreign interest rates (See Box 2). The first assumption, together with disregard of economic growth (Johnson 1977, pp. 256, 259), means that real income does not change. Add assumption (ii), and money income does not change either. With interest rates also constant by assumption (iii), the demand for money must also be unchanged, once equilibrium has been attained. The entire injection of new money is therefore excessive, and must be made undone if economic agents are to return to the comfort of their preferred cash balance equation. And "the money account" (Mussa's description of the official settlements balance) is the place where the excess money must be disposed off. Hence, credit creation must cause a balance of payments deficit of equal size.

A model along these lines is presented in Box 3 (see next page).

The monetary approach does not tell us through which account "above the line" this will happen (Mussa 1976*, p. 190), but in its simplicity it derives a proposition of major importance – credit creation causes a balance of payments deficit of equal size – on the basis of an economic model that contains only one explicit behavior equation, that for the demand for money. Mussa hails this simplicity by noting that "[t]he narrowness of the monetary approach in its concentration on the official settlements account is complemented by the breadth of the monetary approach in its conception of 'an essentially monetary phenomenon'" (Mussa 1976*, p. 190). I am not sure I fully grasp the value of this complementary benefit but I do want to draw attention to a negative effect of the "narrowness" of the approach: by focusing on the *balance* of payments as a residual, it turns a blind eye to exogenous impulses originating in the balance of payments.[16] With exports, and more recently also capital movements, as the dominant autonomous determinants of all but the largest economies, any approach that ignores these aspects risks incurring a heavy cost in terms of relevance.

Box 3. The Johnsonian Model in its Simplest (Long-Run Equilibrium) Form

$MO = kY + qr$ (J-1)

$\Delta MO = \Delta R + \Delta D$ (J-2)

$Y = y.p$ (J-3)

$y = y(\text{full employment}) = \text{constant}$ (J-4)

$p = p(\text{world}) = \text{constant}$ (J-5)

$r = r(\text{world}) = \text{constant}$ (J-6)

where:
y = output;
p = price level;
r = interest rate;

From (J-1), (J-3), J-4), (J-5) and (J-6);

$\Delta MO = 0$, and hence (J-7)

$\Delta R = -\Delta D$ (J-8)

In any event, the proposition in its simplicity is obviously wrong, even if all its assumptions are fulfilled. There are two "money accounts," not one. The monetary authorities can create (base) money in two ways, by buying foreign assets or domestic assets. By the same token, economic agents can get rid of excess holdings of money in two ways, by buying foreign goods or securities or, much more easily, by repaying domestic credit to the banking system. Whether and to what extent credit creation leads to one or the other result will, to begin with, depend on how it takes place.

When credit creation takes the form of open-market operation in a fully equilibrated credit market, the Johnsonian assumption that the operation has no effect on the demand for money, so that economic agents find themselves with a corresponding amount of excess money, may approximate reality. In those circumstances, however, they are most likely to react to the imbalance in their cash position by the repayment of loans from domestic banks, and only a small part of the credit creation will lead to a loss of reserves – unless

the linkage of the country to the international capital market is so perfect that most of the newly created money will at once flow abroad.

In many developing countries, on the other hand, credit is rationed and credit creation – made possible, for example, by a relaxation of credit restraint of the commercial banks, or as a result of government deficits financed by the banks – is associated with the creation of additional incomes.[17] Indeed, as noted above, the Fund's monetary approach takes domestic credit creation as a proxy for an autonomous increase in demand, and the model introduced to describe that approach then finds that the full amount of the credit creation will over time leak out through the balance of payments.

But note that that model does not support Johnson's *dictum* that the loss of reserves reflects the presence of excess money in the economy. The increase in the rate of credit creation, or the higher level of exports caused, for example, by an increase in the price of the country's main export staple, will raise the money supply only gradually, week by week, as the new economic situation persists. But these impulses will, more or less at once, raise the annual level of incomes of those who benefit from it, and thereafter income in the country will continue to rise as a result of successive spending rounds. As the demand for holding money increases correspondingly, the economy will experience a shortage of money, to be met only gradually by an increase in its supply. Yet in spite of this shortage of money, money will be sent abroad to pay for additional imports, as expenditure is at least partially adjusted to the higher income level. In the step-by-step approach of the Polak model, the stock of money remains below its income equivalent until the end of each income period; as soon as that point is reached, a new expenditure round starts which, by raising income of a new group of beneficiaries, recreates at once a shortfall of money for them. On average, therefore, money will be below the desired level.[18] Prais's more elegant formula for the adjustment of money holdings implies a continuous shortfall as the stock of money approaches asymptotically *from below* to the demand for it, which itself rises asymptotically to its equilibrium value.[19] The equivalent of Prais's demand-for-money equation is also used (without attribution) in two Chicago papers that do not rely on the full-employment postulate (Dornbusch 1973*, pp. 169–70 and Rodriguez 1976*, p. 234);[20] but perhaps because their focus is on the ultimate equilibrium situation rather than on the process by which it is reached, these papers do not record how the stock of money adjusts to the demand for it.

Reality will not be as hard-edged as the description in these models suggests. Price increases for export crops, for example, rarely take place in large annual steps, then staying for a long period at the new level. Exporters may know of them in advance, and may have sold part of their crop in forward markets. They may also not fully trust the increase in their annual

income level from day one of the higher prices, and for that reason may moderate the adjustment of both their expenditure and their preferred cash balance levels. Nevertheless, if one accepts the basic model in which the demand for money is a function of the level of income and the supply of money builds up only gradually over time, the conclusion must be that any cause which raises income while creating additional money will be accompanied by a shortage of money.[21]

4. EMPIRICAL EVIDENCE

The developers of both "monetary approaches" engaged in econometric studies to find support for their theoretical constructs. A brief survey of the success, or lack of it, of these efforts brings our appraisal of the two approaches to its conclusion.

4.1 Testing the Keynesian Version

On the basis of the assumptions of the Polak model, one can calculate expected values for the dependent variables (GNP, imports and money) as weighted averages of current and past values of the sum of the autonomous variables ($\Delta D + X + K$), with weights that are simple functions of the country's income period and the marginal propensity to import. Polak and Boissonneault (1960#) compared imports calculated according to this formula with actual imports and found the results to be reasonably satisfactory. But a follow-up study (Fleming and Boissonneault 1961#) found a systemic lag of predicted behind actual imports and suggested a number of possible causes for it, such as the effect of higher export earnings on import restrictions, the above-average import content of investment in raw or semi-manufactured materials financed by bank credit, or perhaps reverse causality (pp. 140–41). Although their data had not enough degrees of freedom to determine a precise lag, they noted that actual import correlated on the whole better with current autonomous factors than with these factors as lagged according to the Polak coefficients.

What appears not to have been noticed at the time, nor even 15 years later, when the Fund volume was brought out (Rhomberg and Heller 1977, p. 10), was that the introduction by Prais of an improved demand-for-money equation would by itself lead to a reduction in the lag structure of the model. Interest in that lag structure has, in any event, waned. It plays no role in the Fund's "financial programming." Awareness of the lag is still useful as a reminder that an initial payments surplus, consequent upon a rise in exports, will not persist as the economy adjusts. But from a policy point of view, the

lesson that excessive credit creation produces an equivalent loss of reserves, and that it will do so pretty soon, is more important than knowing how long the lag will be.

4.2 Testing the Johnsonian Version

In contrast to the precise–perhaps overly precise–timing characteristics of the Fund's monetary model, the Johnsonian approach leads to propositions that are expected to hold in an unspecified long-run equilibrium situation. As Mussa (1976#, p. 193) noticed, this seemed to put their policy relevance into question: "because the horizon of the policy maker is typically much shorter than a decade, ... the advocacy of a monetary approach to the balance of payments necessarily involves the assertion that these "longer run consequences" materialize within a time horizon of two or three years. As pointed out by Hahn (1977, pp. 243, 246) *assertion* is in this context hardly a substitute for evidence.

The empirical contributions in the Chicago book appear to provide a more than satisfactory answer to this conundrum. All four correlate quarterly data for reserves (for Australia, Sweden, Japan, and Spain respectively) with *simultaneous* quarterly data for central bank credit and the money multiplier, plus the three factors entering in the demand-for-money function (real income, the price level, and the rate of interest), and all find coefficients for central bank credit reasonably close to the hoped-for value of *minus* 1. They all interpret this as a confirmation of the validity of the monetary approach.[22] As noted first by Magee (1975), these findings are a surprising outcome of an exercise subjecting a long-run theory to empirical tests with unlagged data. They are also too good to be true, as hinted by Magee and demonstrated by Frenkel, Gylfason, and Helliwell (1980, pp. 585–86). Given the definition

$$\Delta R = \Delta M - \Delta D \qquad (7)$$

and a well-fitting demand-for-money function

$$\Delta M = f(x, y, z), \qquad (8)$$

the fact that the correlation

$$\Delta R = F(x,y,z; \Delta D) \qquad (9)$$

yields a coefficient for ΔD close to *minus* 1 says nothing about the validity or otherwise of the monetary approach.[23]

Similar problems bedevil some of the attempts to measure the 'offset coefficient', that is 'the fraction of any policy-induced change in bank reserves which is offset through the capital account' (Herring and Marston 1977, p. 26). To estimate this coefficient for a number of countries (Germany,

Australia, Italy and the Netherlands), Argy and Kouri (1974) and Kouri and Porter (1974) ran correlations on reduced-form equations derived from a quite ambitious (though remarkably incomplete–see below) model. Their theoretical model includes foreign and domestic variables for wealth, incomes, interest rates and demand for foreign and domestic bonds. A number of these variables are, however, dropped on account of lack of data, and the foreign interest rate (taken as the Eurodollar rate) turns up statistically insignificant in all cases. Thus the operative reduced-form equation that they tested on quarterly data for the four countries boils down to the following:

$$K = \alpha\Delta Y - \beta\Delta D - \gamma CA, \qquad (10)$$

in which CA stands for the current account which, like ΔY and ΔD, is treated as an exogenous variable. Their correlations produce extremely good fits for various definitions of K for each of the four countries. That quarterly figures for capital movements can be explained so well by a simple formula may seem surprising, until one recalls that, by definition,

$$\Delta MO = K + \Delta D + CA, \qquad (11)$$

from which it follows that the estimation of the coefficients in (10) by correlation is merely an inefficient way to estimate the relation between money and income, with the expected values for β and γ close to 1. The γ's found by the authors turn out to be very close to unity, but the β's (which according to their model should be the same as the γ's) are closer to 0.5. But when Neumann (1978) redid these correlations for Germany with revised data, he found values for β that also did not significantly differ from unity.[24]

Porter and Kouri infer from their correlations that (i) "changes in income are highly significant in explaining capital flows, ..." (ii), "capital flows are to a large part the result of changes in monetary policy;" and (iii) "the current account balance tends to induce offsetting capital flows, thereby stabilizing the balance of payments" (p. 464). These conclusions follow, not from the correlations, but from the assumptions of their model, namely that ΔY and CA are both exogenous – that exports and credit creation do not affect income and that income does not affect imports. Thus, for example, if exports do not affect income, they cannot affect the demand for money, and the money they bring into the country is excessive. The excess money cannot be used to repay bank credit which is also exogenous, so it must go out by the only way left, as an outflow of capital.

There was no logical necessity for the Chicago monetary approach to limit itself to the effects of measures of monetary expansion in the very long run. On the theoretical side, the excursions of Dornbusch and Rodriguez into shorter-term developments have already been mentioned. An explicit "short-run monetary approach" is presented by Blejer and Fernandez (1978) and a statistical test of this approach is provided in Blejer (1977). The latter paper

studies the distribution of the impact of excess monetary expansion in Mexico, 1950–73, between inflation – acknowledging that the price of nontradables can move away from the world price level even in an open economy – and the balance of payments as measured by the change in reserves. The theoretical model is tested in correlations that (unlike those reviewed in the preceding paragraph) allow for lagged effects and produce respectable correlation coefficients for the two short-run effects. These findings are again somewhat surprising, because they are based on one component of gross money creation, credit creation, disregarding exports and capital flows.

5. CONCLUSIONS

Although the two monetary approaches analyzed in this paper share an important policy conclusion, namely that a sustained excessive creation of credit will lead to a sustained loss of reserves of equal size, they differ in the reasoning that supports this conclusion and in the time frame within which it can be expected to materialize.

1. Under the Johnsonian approach, the loss of reserves occurs because credit creation produces "unwanted cash balances," which, it is argued, can work their way out of the system only by means of a negative "balance" of international payments. This conclusion overlooks the possibility that holders of unwanted money balances have a second way to reduce them, namely by repaying credit. While the Johnsonian approach bases itself on the assumption that in the long run neither output nor prices can be affected by monetary policy, the Keynesian monetary approach focuses on the immediate impact on income and perhaps also on prices of an expansionary shock, whether that shock arises from credit creation, a rise in export income, or capital inflows. It finds that excess credit creation leads to a balance of payments deficit *in spite of the fact* that the economy experiences a continuous shortage of money, which is gradually eliminated as the process of adjustment toward a new equilibrium takes place.

2. The conclusions of the Johnsonian approach are presented as valid "in the long run." The length of this run depends on processes, set off by an initial disturbance, that are acknowledged as being possibly quite slow, such as the return of the economy to full employment, or the working of "the law of one price." Accordingly, the policy relevance of this approach, and of the monetary approach in general, has been widely questioned. The Keynesian monetary approach does not rest on unspecified assumptions of long-run equilibrium but on short-run behavior equations; its underlying model can be expressed in terms of successive short time periods, and the model itself indicates how soon the balance-of-payments results can be expected.

Improvements in the model, as well as statistical tests, suggest that the balance-of-payments effects of autonomous shocks materialize with less delay than predicted by the original version of the Fund model. The Johnsonian approach did not generally see a need for short run adjustment equations, but it did not rule them out either. There is reason, therefore, to accept the empirical findings of the Keynesian approach as confirming the general validity of the policy implications of the monetary approach, in either version, a validity of which the practitioners of monetary policy in central banks – with the Bank of England in the early postwar decades as the most notable exception – had long been convinced.

ENDNOTES

[1] The author was the Director of the Research Department of the IMF from 1958 to 1979. This paper was prepared for a conference on "The Open Economy Model: Past, Present, and Future" at Ben–Gurion University in Beersheba and Bar–Ilan University in Tel–Aviv, Israel, June 18-21, 2001.

[2] The gentle timing references in the passages cited from the two prefaces suggest the jockeying for intellectual primacy noted by Blejer et al. (1995, p. 710).

[3] Since many of the journal articles referred to in this paper have been reprinted in the two compendia mentioned earlier, all page references are to these convenient sources. Papers marked by an * after the year of original publication were published or republished in Frenkel and Johnson (1976). Papers marked by a # after the year of original publication were published or republished in Rhomberg and Heller (1977). The years shown are those of the first publication, but page numbers refer to the books indicated, not to the original source.

[4] Johnson's posthumous paper on the subject still describes his "new approach to balance-of-payments theory" in terms of "alternative approaches to devaluation theory" (Johnson 1977, pp. 251-52)

[5] Polak 1957#, pp. 18–21 presents charts for 44 countries to support the view that the annual data for the velocity of circulation "show considerable evidence of year-to-year stability or of a tendency for movements in one year to be subsequently reversed" (p. 17).

[6] If the period selected is one year (as in Holtrop 1959), k equals the inverse of the annual velocity of circulation; if the unit period is taken as the income period of circulation (as in Polak, 1957), k = 1. Note that the results of the model are not invariant to changes in the length of the unit period, combined with the corresponding change in k. If the period is one year, the adjustment of MO to an autonomous change in D (or in X or K) is much slower than with a period of, say, three months, and the real effects of the change will be correspondingly greater – as we shall see when we discuss Prais's improvement of the model below.

[7] Colin Clark explained the underlying reasoning as follows: "Neither Mr. Keynes nor Mr. Kahn...throw any light on the problem of the effect of changes in exports on

general economic activity. In Australia (and for that matter in Great Britain) this is a problem of most urgent importance. In our analysis of the Australian statistics, Mr. Crawford and I adopted the definition of putting changes in value of exports on exactly the same footing as changes in the level of investment" (Clark 1938, p. 438).

[8] The temptation to follow statistical nomenclature rather than economic analysis by adding to the multiplicand "foreign investment" – the trade balance, rather than its presumed autonomous component, represented by exports as a first approximation–was overcome only after a long and heated debate. Machlup (1943, Chapter III) relates the prewar debate on this issue; see also Polak (1947), Haberler (1947), and Polak and Haberler (1947).

[9] Nurkse's comment on this possibility foreshadows the Keynesian monetary approach: "...the successive spending of additional incomes earned in the first instance in the export trades will tend to produce an increase in total income which in turn will tend to increase imports so as to balance the higher exports. Some part of the additional income will be saved; and if there were no increased investment to absorb this saving, the rise in income would be checked and the adjustment of imports to the increased exports would be incomplete. In fact, however, the rise in current domestic expenditure is likely to induce a higher rate of capital expenditure, which will tend to absorb the additional saving" (Nurkse 1943, p. 101).

[10] Frenkel and Johnson (1976*, p. 30) criticize Meade for confusing the two propensities

[11] Polak (1957#, pp. 24–6). The same argument is found in Dornbusch (1973*, p. 170): "...when monetary stock equilibrium is attained, the average [and hence also the marginal] propensity to spend equals unity." Also Johnson (1976, p. 450): "the monetary approach...implies that the level of expenditure...must converge on the point...[where it is] equal to income." This had not been Johnson's original position; his 1958* paper (p. 55, footnote 12) still featured the Keynesian trace of a marginal propensity to spend of less than unity, which (it appears) he endows with some a priori probability by stating that it is the precondition for "multiplier stability."

[12] His description of the time dimension also understates its quantitative importance. Some, rather modest, time periods will elapse between each round of spending, but to achieve even a large proportion of the full effects will take a substantial number of these periods.

[13] His estimate of the income velocity of four per year relates to 'active balances' only, derived by the exclusion of between 50 and 60 percent of the money supply as 'minimum balances, with zero velocity of circulation'.

[14] As specified most clearly by Fleming and Boissonneault (1961#, p. 133), the model assumes that "money coming into existence as the counterpart of domestic credit expansion...enters immediately into income and is successively respent at the end of each subsequent income period."

[15] Thus for example: "The assumption of normally full employment reflects the passage of time and the accumulation of experience of reasonably full employment as the historical norm rather than the historical rarity that Keynes's theory and left-wing Keynesian mythology made it out to be" (Frenkel and Johnson, 1976*, p. 25).

[16] This is also one of the criticisms of the Chicago approach in Rabin and Yeager (1982).

[17] This is also Mundell's assumption, namely "that the country under consideration is a small economy...[and] that it lacks a credit market" (Mundell, 1967*, p. 67).

[18] This lag is not evident in Polak's Chart 2 (Polak 1957#, p. 34), where the same curve describes the growth of money and, with a different scale, income. But this hides an average lag of half an income period, as money is measured at the end of the period and income as the average for the same period.

[19] Prais describes the working of the model in a footnote on p. 149.

[20] It is also used, more recently and with attribution, by Mundell (1991, p. 499).

[21] In an equilibrated money market, the 'shortage of money' would be reflected by a rise in the rate of interest. But when the credit market is subject to severe rationing, bank interest rates would probably fail to register any such shortage. If there were data on the interest rate in a curb market, it might be possible to test whether that rate fluctuated in association with the value of exports and the money supply.

[22] "Australian international reserve flows over the past two decades are consistent with the pattern implied by the monetary approach to the balance of payments." (Zecher 1976*, p. 296); "The monetary approach has passed our tests both as far as its underlying view of the world is concerned and in its implications with respect to the balance of payments." (Genberg 1976*, p. 323); "The empirical analysis of Japan presented in this study strongly supports the theses of the monetary approach..." (Bean 1976*, p. 334); and "These initial results strongly point at the monetary character of balance-of- payments disequilibria." (Guitian 1976*, p. 347).

[23] Even if the explanation of the money supply is poor, as was the case in the study on Spain, the identity of the central bank balance sheet may still produce a coefficient for ΔD close to minus 1.

[24] Obstfeld (1982) raised additional questions about the reduced–form approach to the estimation of the offset coefficient.

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Discussion

Jacques J. Polak's

THE TWO MONETARY APPROACHES TO THE BALANCE OF PAYMENTS: KEYNESIAN AND JOHNSONIAN

by Yakir Plessner
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The Johnsonian approach to the balance of payments as a "money as an asset"-based approach.

There are basically two sets of comments that come to my mind concerning Polak's paper. The first concerns a much more fundamental question than which monetary approach to the balance of payments should be preferred. Namely, how money is viewed. The second is, which approach is nearer what seems to me to be the main message of the monetary approach.

I shall start with the former. What caused me to look beyond the questions of the monetary approach is the fact that Polak mentions Dennis Robertson and his representation of money in the economy by $M_0=kY$. This brings to mind the sort of period analysis based on the circular flow of money, the approach advanced most notably by Dennis Robertson, but also by economists such as Angell, Howard Ellis and, perhaps most importantly, by Keynes before the General Theory. While this approach was based on the essential role of money as medium of exchange, The General Theory was the precursor to the theories, ruling still, based on money as an asset.

As far as I can tell, the watershed is the passage in Keynes dealing with what became known as the demand for money. A few quotes will be very helpful here. At the beginning of Chapter 15 Keynes develops his approach to

> The subject ... that ... has been sometimes discussed under the heading of the Demand for Money. It is also closely connected with what is called the income-velocity of money;-- for the income-velocity of money merely measures what proportion of their incomes the public chooses to hold in cash, so that an increased income-velocity of money may be a

> symptom of a decreased liquidity preference. It is not the same thing, however, since it is in respect of his stock of accumulated savings, rather than of his income, that the individual can exercise his choice between liquidity and illiquidity. And, anyhow, the term 'income-velocity of money' carries with it the misleading suggestion of a presumption in favor of the demand for money as a whole being proportional, or having some determinate relation, to income, whereas this presumption should apply, as we shall see, only to a *portion* of the public's cash holdings;...

The quote is a masterpiece of ambiguity. One can still clearly discern in it traces of the distinction between Active Balances and Idle Balances, so prominent in Robertson's writings and in Keynes's own writings. But at the same time the paragraph talks about holding money as if this referred to the entire amount of money. I believe that it is this ambiguity that resulted in what is seemingly a "general" description of the demand for money.

This is further buttressed by the following:

> For the demand for money to satisfy the [transactions and precautionary] motives is generally irresponsive to any influence except the actual occurrence of a change in the general economic activity and the level of income;...

This implies, I think, that one cannot speak here of any "demand" in a meaningful sense, since no decision is made here about whether or not to hold money. You get your payment at the beginning of the month, and most of it is spoken for by routine transactions (grocery, newspaper, barber, etc.). The only real decision is how much liquidity to keep as a precautionary reserve, since some of that reserve may turn out to still be in one's pocket or checking account when the next payment comes around. In which case interest was foregone for (ex-post) no good reason.

Keynes then describes the demand for money as

$$M=M_1+M_2=L_1(Y)+L_2(r),$$

saying that

> L_1 mainly depends on the level of income, whilst L_2 mainly depends on the relation between the current rate of interest and the state of expectations.

Finally, Keynes says that

> It is not always made clear whether the income-velocity of money is defined as a ratio of Y to M or as the ratio of Y to M_1. I propose, however, to take it in the latter sense. Thus if V is the income-velocity of money, $L_1(Y)=(Y/V)=M_1$.

In light of these and many other quotes that I could have produced, it is quite obvious to me that ever since Keynes the role of money as a medium of exchange has been excised from economic theory, and money became a good, or an asset, indistinguishable from any other. Except that we denote it by M, and insist on calling it money.

With this background, let me turn to comparing Polak's and Johnson's approaches. In Polak, the "demand for money" equation reads $M_0=kY$, essentially Keynes's L_1. This is not true for the Johnsonian version, where $M_0=kY+qr$ and more generally in Frenkel and Johnson (*The Monetary Approach to the Balance of Payments*, p. 156), M=pf(y,i). Or, in Frenkel Gylfason and Helliwell, M=L(p,y,r).

But the really revealing statements are not the mathematical ones. In what follows, the quotes are from Frenkel and Johnson. On the very first page of the *Introductory Essay*, Frenkel and Johnson state that

> Consequently, in analyzing the money account, or more familiarly the rate of increase or decrease in the country's international reserves, the monetary approach focuses on the determinants of the excess domestic flow demand for or supply of money.

This is essentially the view that, based on Walras' Law, one can look at the money-market instead of at the goods' market, implying that money is a commodity, or asset, like any other.

Next, Johnson states (Chapter 2, p. 49):

> The first [alternative] is that cash balances of residents are running down, as domestic money is transferred to the foreign exchange authority.

He then goes on to say on p. 51:

> To summarize the argument so far, a balance-of-payments deficit implies either dishoarding by residents, *or* credit creation by the monetary authorities – either an increase in V, or the maintenance of M.

This is very important. Dishoarding does not, of course, increase V: it increases the amount of money in circulation, as idle balances are injected into the circular flow. To use Keynes's notation, M_1 increases at the expense of M_2. But Johnson does not distinguish between M_1 and M_2. Hence M cannot increase by dishoarding, and Johnson has to resort to V. Johnson could have meant that consumption increases at the expense of saving, but this need not have any effect on the flow of money in the system.

This supposition may find support by what Johnson says on p. 52:

> Two sorts of aggregate decision leading to a balance-of-payments deficit may be distinguished in principle, corresponding to the distinction drawn in monetary theory between 'stock' decisions and'flow' decisions: a

(stock) decision to alter the composition of the community's assets by substituting other assets for domestic money [***surely, Johnson must have meant foreign assets, else there is no reason to expect any influence on the balance of payments***], and a (flow) decision to spend currently in excess of current receipts. [***meaning dissaving***].

To my mind, balance-of-payments problems arise when the income earned exceeds real GDP when measured at current prices. This is the Robertsonian way of looking at things: for any given period, workers are paid before what they have produced is sold. If what they are paid can purchase more than what they have produced when evaluated at the prices that prevail at the time of payment, then trouble results. If the exchange rate is fixed, the main effect will be a balance-of-payments deterioration; if the exchange rate is free to float, there will be both inflation and a worsening of the balance of payments.

It follows that contrary to what Johnson claims, there are no "real" forces that could lead to balance-of-payments problems. In a barter world, balance-of-payments problems are just as impossible as inflation is. Balance-of-payments problems are therefore caused by the existence of non-commodity money, and are hence monetary in nature, not as an approach.

Let me now turn briefly to the second subject namely, which of the two approaches tells the story of the balance of payments the way I (and I hope everyone else) understands it today. My first observation is that in Polak's version the price level is absent. All his variables are nominal. Hence, nothing can be said about inflation, which misses a key implication of the monetary approach. Johnson, on the other hand, assumes p to be constant, but this, so I surmise, is because he wrote in a world of fixed exchange rates (those appear neither in Polak nor in Johnson).

The one thing that is all important as a conveyor of the flavor of the monetary approach is the result that $\Delta R=-\Delta D$. While it may be derived from Polak, it is actually an unavoidable result in Johnson, as it should be in a regime of fixed exchange rates.

Which brings me to conclude on a personal note: it is this logic that has brought me to dream up "dollarization" for Israel, an idea that was first broached in a conversation that I had in 1980 with Domingo Cavallo in Israel. I realized that inflation in Israel was mostly the result of the government's (unsuccessful) attempt to plug the hole in the balance of payments through devaluations. And that inflation could be stopped relatively easily if the hole were to be plugged by different means and the rate of exchange were frozen. This, to my mind, is the simple economics of balance-of-payments problems, it is closely related to the concept of "absorption", and it is monetary without the need to employ a dubious demand for money.

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Chapter 3

LONG-TERM FLUCTUATIONS OF REAL EXCHANGE RATES WITH EMPHASIS ON THOSE CAUSED BY INFLATION

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1. INTRODUCTION

It is well known that flexible exchange rates are mostly connected with discretionary monetary regimes. Commodity standards using the same commodity, for instance gold or silver, or a commodity basket as a base necessarily imply fixed exchange rates. Under such conditions these rates can only move in a very narrow range determined by transportation and insurance costs. In gold or silver standards the limits of this range are given by the upper or lower gold or silver points. If free markets in these commodities exist, the exchange rates will be maintained within this range by the arbitrage activities of private individuals.

Things change, however, if different commodities, for instance full-valued gold and silver coins, are used in different countries (or sometimes even within one country) as a base of the monetary system. Then flexible exchange rates are present which follow the relative price of the respective commodities. We will consider below two examples of long-term fluctuations of real exchange rates in such situations.

On the other hand, fixed exchange rates can also be present with discretionary monetary regimes, like with currencies based on paper money. A country with such a regime can either fix its exchange rate with a currency still on a commodity standard (so that it is for instance on a gold exchange standard without gold convertibility for the public), or with that of a country on a discretionary standard, like the US with the $ or Germany with the DM.

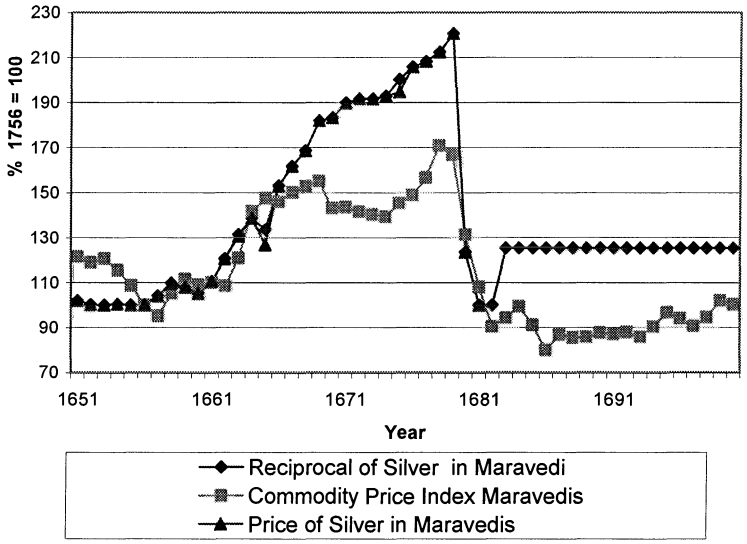
Economic theory has experienced great difficulties in explaining the determinants of flexible exchange rates. Hundreds of papers and books have been written on this subject. A first approach has been the development of the purchasing power parity (PPP) theory, as developed by Gustav Cassel (1922), David Ricardo, and centuries before them by the scholastics of the School of Salamanca and perhaps even by Copernicus. But though the PPP in fact often serves as a long-term attractor for flexible exchange rates (as will be shown below with the help of several historical cases), they not only show short-term erratic behavior, but also medium to long term swings lasting a number of years (now often called over-shooting; for an early paper see Dornbusch; 1976). In the following we will be concerned with many historical examples which show that these swings are a general characteristic of flexible exchange rates. In an earlier paper (Bernholz 1982, see also Bernholz, Heri and Gaertner 1985), in which I studied this phenomenon, I pointed out that Heinrich Friedrich Freiherr von Storch (1825) was the first to provide an explanation of this phenomenon in the beginning of the nineteenth century. He put forward the hypothesis that deviations from PPP were caused by different rates of inflation and ended when these differences were removed. He also presented empirical material to substantiate his views. Though it is obvious that medium- and long-term swings of flexible exchange rates can also be caused by other factors, we will be mostly concerned with this hypothesis subsequently.

2. LONG-TERM SWINGS IN METALLIC MONETARY STANDARDS

As already mentioned, long-term swings around purchasing power parity can also happen if different commodities like gold, silver and copper are used in different countries, or even within the same country. This can happen in the latter case if the government does not or is not able to maintain a fixed exchange rate between the two metals. To maintain a fixed rate is, for instance, sometimes difficult because of the working of Gresham's law.

An interesting example of an undervaluation of a currency occurred in Spain during the 16th century. In this case the government debased the small currency, the *vellon*, to get a revenue from the inflation tax for its ever increasing expenditures, mainly caused by the wars, to maintain its world-wide empire. Note that this happened when the amounts of the silver imports from the mines of Mexico and Peru were already declining. By contrast, the main silver coin, the piece of eight, the precursor of the $, which served as an international currency, was not changed in its intrinsic silver value. In spite of all its efforts, supported by heavy fines and penalties, the Spanish government did not succeed to keep the exchange rate between the two

currencies fixed. An undervaluation of the vellon (denominated in maravedis) compared to silver developed (Figure 2.1).

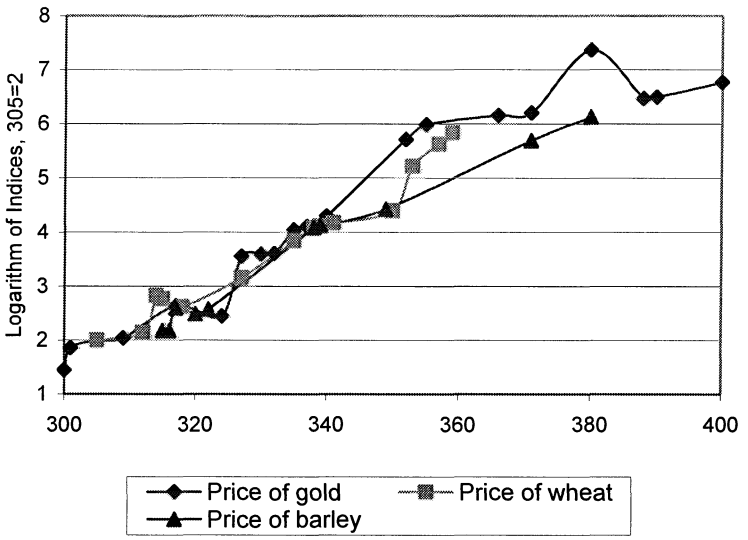


Note: The 'diamond' line is an index of the reciprocal of the silver content of the vellon money, which was reduced even further.
Source: Hamilton (1947).

Figure 2.1: Commodity Price Index and Price of Silver in Maravedis in Spain 1651-1700

As one can see from the figure, the price of silver expressed in vellon maravedis, that is the exchange rate moved up much more strongly than the commodity price index during the debasement of the vellon. But when this debasement ended in the early 1680s, the exchange rate dropped more strongly and PPP was restored. After that the silver content of the vellon was somewhat increased and stabilized, that is a fixed exchange rate was restored. The price level only moved up slowly to this new parity with the piece of eight.

An even earlier example is provided by the debasement of the small money in the inflation taking place in the late Roman Empire of the fourth century (Figure 2.2).



Source: Bagnall (1985).

Figure 2.2: Price Indices for Gold, Wheat and Barley, 301-400 A.D.

In this case again, only the silver denarius and the silver drachma were debased, and in time lost nearly all their silver content. On the other hand, the Roman gold coin, the solidus, introduced during the otherwise not successful monetary reforms undertaken by Deocletian remained rather stable. And as can be seen from Figure 2.2, the gold price again moved ahead of those of wheat and barley from the 340s, though this fact seems not to be pronounced in the figure, since we had to take logarithms. So a pronounced undervaluation of the drachma and denarius seems to have developed. It has, however, to be pointed out that though this hypothesis is in conformity with the facts known, the data are too scarce to make the evidence conclusive (private communication of Professor Bagnall of Columbia University to the author).

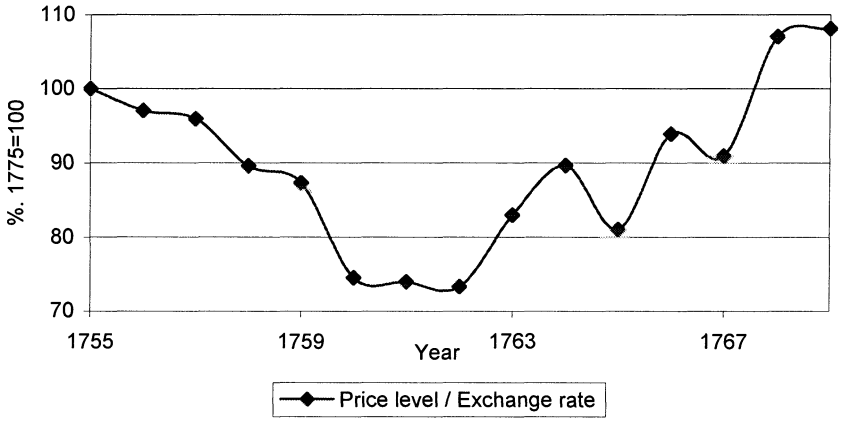
3. PAPER MONEY INFLATION AND UNDERVALUATION IN AN ENVIRONMENT WITH SILVER OR GOLD STANDARDS

Sweden saw the introduction of the first banknotes in Europe in the second half of the seventeenth century, perhaps since its metallic currency was based on a copper standard, which implied high transportation costs for greater payments. After such early private and public experiments in paper notes, the Swedish Riksbank began to issue daler notes in the first half of the

seventeenth century. These notes lost their convertibility into silver already by a directive in 1745 (Eagley 1971, p. 7). The quantity of banknotes was increased more rapidly to finance the deficit of the government when Sweden entered the Seven Years' War in 1756. In 1759 even the convertibility of banknotes into copper coins was suspended (Eagley 1971, p. 8). Sweden was on a pure paper money standard, whereas all its main trading partners remained on a gold or silver standard. As a consequence, an undervaluation of the paper daler currency developed (Figure 3.1).

This development ended in 1762, when Sweden concluded a separate peace treaty with Prussia, and especially when the Cap party defeated the expansionary Hat party about a year later and won the majority in the Swedish parliament, the Riksdag. They initiated a strongly deflationary monetary policy. As a consequence the exchange rate fell more quickly and strongly than the price level. PPP was reached in 1768 and even a small overvaluation developed (for more details, see Bernholz 1982).

Similar undervaluations can be observed for Massachusetts from 1740 to 1749, during the American Civil War from 1861 to 1865, and in Argentina during the Baring crisis from 1890 to 1898. All these countries pursued an expansionary monetary policy which led to a suspension of convertibility, thus to a pure paper money standard and to undervaluation of the domestic currency. A return to a stable monetary policy combined with or followed by a re-establishment of the silver or gold standard in time removed the undervaluation.

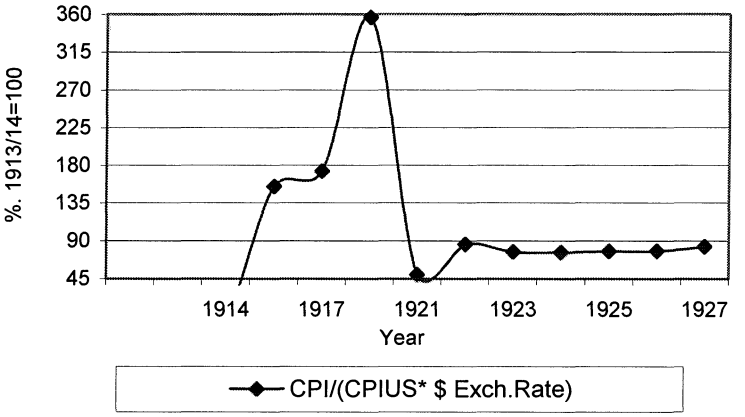


Note: Exchange rate: Swedish daler per Hamburg mark Banco, a pure silver standard.
Sources: Data on banknotes circulating and exchange rate: Sveriges Riksbank (1931). Price index: Karl Amark (1921). See also Joerberg (1972).

Figure 3.1: Undervaluation During Swedish Paper Money Inflation, 1755-1769

Similar events took place as a consequence of World War I in Czechoslovakia, Belgium and France as a consequence of inflation and later stabilization and a return to the gold standard.

Let us consider the case of Czechoslovakia as an example. This country belonged to the Austro-Hungarian empire until the end of the war. When it was made independent, a strict deflationary policy was initiated to stabilize the crown, which had suffered from the inflationary financing of the war efforts. First an overvaluation of the crown is shown in Figure 3.2. This is often the case in the beginning of such events, when exchange controls and isolation of the country because of war take place. But with the end of the war and the ongoing inflation, an undervaluation developed until 1921. But afterwards, because of the strict monetary deflation, the exchange rate of the dollar fell much more strongly than the relative price level, and PPP was nearly restored until 1927 (Figure 3.2). Note that we have taken in this case the relative price level that is the development of the Czechoslovakian divided by the US cost of living index, since the American price level rose also sizeably during the war. In the cases considered before this was not necessary, since the foreign price levels did not move much, for the respective foreign countries were on silver or gold standards, and since they were not involved in wars.



Notes: Cost of living indices for Czechoslovakia (until 1918 of Austro-Hungary) and the USA, respectively, have been used together with Czechoslovakian (before: Austro-Hungarian) crowns.

Sources: Ammon (1923): Die tschechoslowakische Waehrung und Waehrungsreform. Schriften des Vereins fuer Socialpolitik 165, pp. 1-21. Statistisches Reichsamt: Statistisches Jahrbuch fuer das Deutsche Reich, 1925-1934; Die Wirtschaft des Auslands 1900-1927. Berlin: Reimar Hobbing, 1928.

Figure 3.2: Czechoslovak Inflation, Over - and Undervaluation 1914-1927 (1913/14=100)

4. UNDERVALUATION DURING HYPERINFLATIONS

Until now we have studied undervaluations caused by relatively moderate inflations, and also their removal when stable monetary policies were re-introduced. Our sample was, however, not fixed by any selection criteria. There may be, as a consequence, cases which do not follow the pattern postulated by our theory. In our study of more than twenty of such historical cases we have, however, only found two exceptions, namely that of the Confederate currency during the American Civil War and of the continental paper currency introduced during the American War of Independence. But both cases can be rather easily explained by the nearly complete isolation of these countries during the war, in which the coasts were successfully blockaded. Still, it seems advisable, to look at a closed sample whose size is not determined by ourselves. For this purpose, let us select the criterion used by Cagan (1956) to define hyperinflations. According to this well-known definition a hyperinflation begins whenever the monthly rate of inflation first reaches at least 50%, and ends one year after this has been the case the last time. To use a sample of all hyperinflations for our purposes has the additional advantage that minor disturbing factors are overpowered by the sheer size of inflationary developments.

We have tried to find all hyperinflations in history. To our reckoning twenty-nine hyperinflations occurred until today (Table 4.1). As one can see from the Table, undervaluations happened in all these cases except in six of them, where, however, the evidence is mostly ambiguous, as will be shown in a moment. Before, however, let us have a look at eleven of the "normal" cases, in which undervaluation took place (Figures 4.1 and 4.2). To make them comparable we have put on the horizontal axis the number of months before the currency reform took place. As one can see from the figure, all eleven hyperinflations which took place during nearly two hundred years and which were of very different magnitudes showed a marked undervaluation. It is also noteworthy that for some we can observe a tendency to increase shortly before the currency reform. This was presumably caused by information about the imminent reform.

Table 4.1: Undervaluation of Real Exchange Rates during Hyperinflations

Country	Year(s)	Real Exchange Rate	Country	Years	Real Exchange Rate
Argentina	1989/90	+	Hungary	1923/24	+
Armenia	1993/94	+	Hungary	1945/46	+
Austria	1921/22	+	Kazakhstan	1994	+
Azerbaijan	1991/94	+	Kyrgyzstan	1992	+
Belarus	1999	+	Nicaragua	1986/89	(+/-)
Bolivia	1984/86	+	Peru	1989	(+ BMR, -OR)
Brazil	1989/90	+	Poland	1921/24	+
Bulgaria	1979	-(OR)	Poland	1989/90	+
China	1947/49	- (+)	Serbia	1992/94	+
Congo (Zaire)	1991/93	+	Soviet Union	1922/24	-(+)
France	1789/96	+	Taiwan	1945/49	(-/+)
			Tajikistan	1995	+
Germany	1920/23	+	Turkmen-istan	1995/96	+
Georgia	1993/94	+	Ukraine	1993/94	+
Greece	1942/45	+	Yugoslavia	1990	+

Notes: A "+" ("-") means that the hypothesis that the real exchange rate showed an undervaluation has been confirmed (not been confirmed). A "+" together with a "-" shows that the evidence is not clear. BMR and OR mean that the black and the official market exchange rate, respectively, have been used in calculating the real exchange rate relative to a basis period.

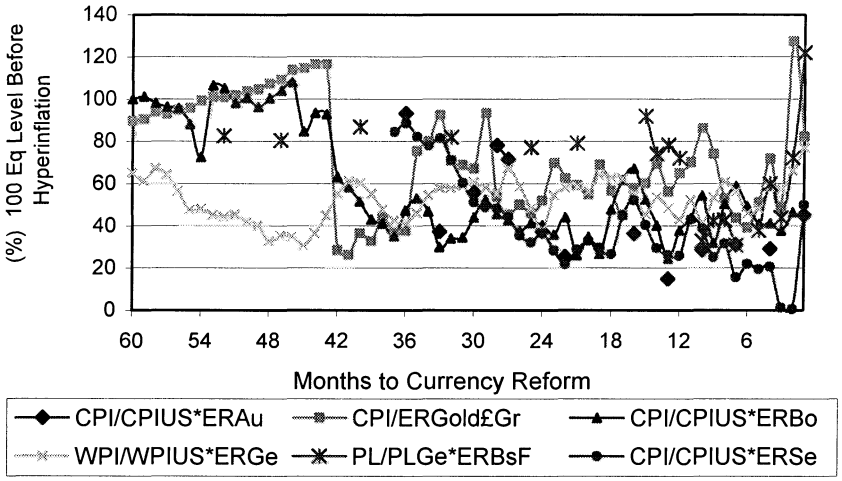


Figure 4.1: Real Exchange Rate During French, Austrian, German, Greek, Bolivian and Serbian Hyperinflations

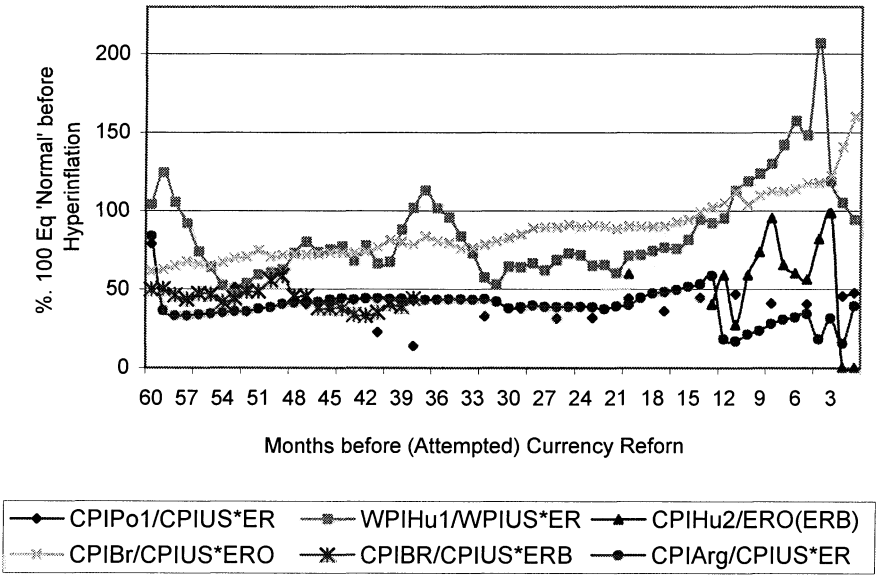


Figure 4.2: Real Exchange Rate During Hyperinflations Poland, Hungry 1&2, Brazil, Argentina

Let us now turn to the seeming exceptions, that is to the cases in which it is either dubious whether an undervaluation took place and (or) in which overvaluations of domestic currencies occurred during hyperinflations. Let us turn first to the Soviet Union and China (Figure 4.3), where the most pronounced overvaluations happened. These countries seem to show that an important reason for this atypical development is, like in the case of the American War of Independence where also an overvaluation occurred, the isolation of these countries from the outside world. The Soviet Union fought a bitter civil war with the Whites supported by Allied Forces which landed in the north and south of European Russia and in Vladivostok. Foreign exchange was thus not very valuable, since it could not be used to import foreign goods. This interpretation seems to be supported by the fact that the two currencies moved towards an undervaluation when the civil war and the allied occupation ended in the Soviet Union, and when Japan had been defeated in World War II, so that the isolation of China ended (see the last 14 to 16 months before the attempted currency reform) (Figure 4.3).

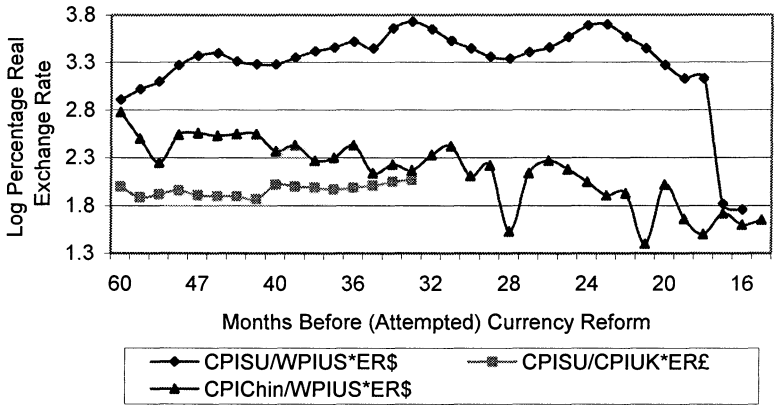


Figure 4.3: Real Exchange Rate During Hyperinflation Sov. Union 4.19 and Chaina 5,44-4,49 Introduction of Chervonetz in SU 11,1922

Foreign exchange controls could be another factor preventing the tendency towards undervaluation at least for some time. If this is true, one or both of the following events should be observed. First, whereas official exchange rates might show an overvaluation, black market exchange rates would move towards an undervaluation. Second, an overvaluation cannot be maintained permanently if the country is not isolated. Exports are hindered and imports are favoured by an overvaluation, and the pressure to use the black instead of the official market increases with the difference between official and black market rates. The official market shrinks, which forces the authorities to

devalue the official rate after some time. Both events can in fact be observed in the case of Nicaragua (Figure 4.4). The official as well as the black market real exchange rate follow the same seesaw pattern, though the latter is lower than the official real exchange rate most of the time.

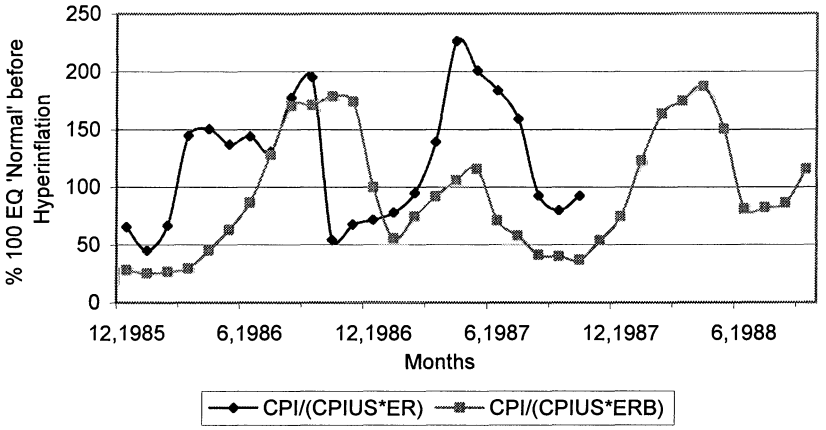


Figure 4.4: Hyperinflation in Nicaragua Real Exchange Rate 12,1986-11,1991

Unfortunately the black market rate is only available for part of the period. But when inflation was already high in the late eighties, though still removed from hyperinflation, even the *official rate* showed an undervaluation intermittently. For all the time the seesaw pattern can be observed. The reason for this is obviously that the authorities tried to maintain the nominal exchange rate in the face of high inflation, which then led to a strong overvaluation. This brought about the negative consequences mentioned above. As a consequence, the nominal official rate had to be adapted, so that the official real exchange rate moved back toward purchasing power parity and undervaluation. This pattern is repeated several times. A quite similar pattern could be observed in the case of Peru. The real exchange rate calculated with the black market rate is always below that calculated with the official rate, and shows an undervaluation for most but not all months. Again the black market rate is only available for part of the period. But when inflation was already high, though still far removed from hyperinflation, even the official rate showed an undervaluation. This changed, however, when inflation accelerated and reached 134% per month in August 1990, to drop strongly afterwards again. From this time a seesaw pattern can be observed. The authorities tried to maintain the nominal exchange rate in the face of high inflation, which led to a strong overvaluation. This brought about the negative consequences mentioned above. As a consequence the nominal

official rate had to be adapted, so that the official real exchanged rate moved back toward purchasing power parity, though it did not quite reach it. This pattern is repeated twice.

The Bulgarian hyperinflation was very short and only figures for the official exchange rate are available. The real official exchange rate was overvalued all the time, but showed also, though somewhat milder, the seesaw pattern.

The remaining historical case of a hyperinflation for which there exists some evidence contradicting the hypothesis that hyperinflation leads to an undervaluation of the currency, is the Taiwanese hyperinflation (Figure 4.5). In the figure three real exchange rates have been drawn. The official and the black market real exchange rates with the US $, and the real exchange rate of the Taipi with the Faipi, the Chinese currency used in Mainland China. As we can see, there was a strong overvaluation of the official exchange rate until 1947, probably again a consequence of the economic isolation lasting still for some time after the end of the war with Japan. Afterwards both exchange rates turn towards becoming undervalued. This is also true for the black market exchange rate. After the successful currency reform of July 1949 the official exchange rate with the $ is overvalued again, whereas the other rates rather approach purchasing power parity. The official real exchange rate, moreover, shows again the seesaw pattern. This can be explained by the fact that some inflation remained in the following years and that the government tried to maintain the nominal official exchange rate.

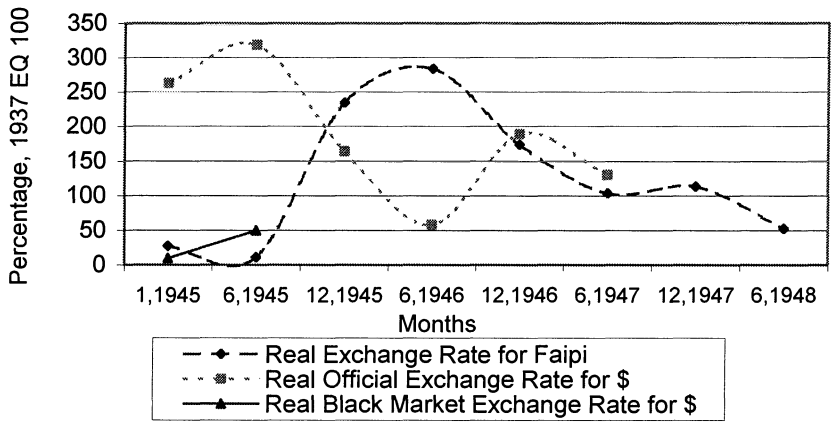


Figure 4.5: Hyperinflation in Taiwan, 1,1937-1,1949. Real Exchange Rate with US$

Taking everything together, it seems that the exceptions to the rule, that a higher rate of inflation than in the main trading partners tends to bring about an undervaluation of the currency, can be explained by the economic

isolation of the country or (and) the effort of the governments to maintain by regulations, fines and penalties an overvalued nominal exchange rate.

5. CAUSES OF THE UNDERVALUATION OF CURRENCIES DURING HIGH INFLATIONS

What are the reasons for the undervaluation of the respective currencies during high inflations? A simple explanation is available. The value of a currency for its holder is given by its use as a medium of exchange when he uses it for his next purchase, compared to the higher transaction and information costs of barter, and the similar value it has for later holders. The latter value has, however, to be discounted, since it accrues only in later periods. The value of a one-time use can be measured by the opportunity costs the holder of money has to bear in the form of interest foregone during the time he keeps the money. For instead of storing the money for a period he could have bought immediately an interest-bearing asset when he received the money. As a consequence, the total value of a unit of money is equal to the discounted sum of the foregone interest, and discounted with the rate of inflation, too, since a money losing part of its value can buy accordingly less at future transactions. As a result, when individuals compare the holding of two currencies, that with the higher rate of inflation is valued less than the value corresponding to purchasing power parity, since not only the value of its present but also all of its future uses are discounted with the rate of inflation.

This simple explanation of undervaluation has, however, to be complicated in three respects. First, the differences in the prices of tradable goods abroad and at home which is caused by the undervaluation leads to an increase of exports and a fall of imports, thus counteracting the undervaluation of the domestic currency by a rising supply and a decreasing demand of foreign exchange. Second, as shown, the government increases the costs of holding another more stable money by introducing regulations against using it, sanctioned by heavy fines and penalties. Third, if almost all people in a certain country or region use a certain currency, it is advantageous to use the same kind of money, since it is easier to find a partner in purchasing or selling than for another currency which is scarcely known and used. As a consequence of these positive externalities or network effects of holding a certain currency, a rather high rate of inflation is necessary to substitute a money which is in the beginning used by almost everybody.

Both the costs imposed by these positive externalities and by the government combine to limit the degree of undervaluation and to retard currency substitution. The latter only becomes substantial at rather high rates of inflation. From the empirical evidence it seems that differences in the rates

of inflation of two currencies of 10-20% per annum are not sufficient to engender more than a very small currency substitution.

The historical evidence for currency substitution during high inflation is overwhelming. This can be demonstrated by just providing a few quotations. For instance, the League of Nations (1946, p. 48) wrote when reporting on the high inflations of the 1920s:

> Thus in advanced inflation, 'Gresham's Law' was reversed: good money tended to drive out bad, and not the other way round; the reason being the irreducible need for a serviceable medium of exchange in any modern economy...

In an earlier paper (Bernholz 1989) I have called this phenomenon Thiers' law, since this French historian and later President of the Republic first described (1825/1840) the process of currency substitution for the hyperinflation of the Great French Revolution. As mentioned, similar events have been observed in many other historical cases of advanced inflations. Especially interesting are those in which, like in the French hyperinflation, governments were not able to substitute by a successful reform a stable money for the national currency. For in these cases stable money returned not only without, but against the determined efforts of governments to keep it out of circulation with the purpose to preserve the base of the inflation tax. In the end the returning stable money absolutely drove out the bad money, so that one can speak of a "naturally emerging" or an unplanned currency reform. The government only finally legalized the stable money, since it was forced to decree that taxes must be paid in stable money after the inflation tax had been eroded. Six historical cases of this sequence of events have been documented (Bernholz 1989).

If Thiers' law holds for countries getting rid of advanced inflation by a "natural" return to stable and the repudiation of instable money, we should also expect a gradual substitution of bad by good money in cases in which advanced inflation is later ended by a currency reform, i.e., by a change of the monetary regime. This can, indeed, be documented for several hyperinflations, like the Polish and German ones in the 1920s (League of Nations 1946, p. 48; Holtfrerich, 1980, pp. 301 sq.) and the Greek and Chinese in the 1940s (Delivanis and Cleveland, 1950, pp. 96-101; Chou, 1963, p. 27).

As already mentioned, the amount of stable money circulating is usually not known to statistical bureaux. Moreover, the government may not even want to publish this information as far as it is available. Thus almost no time series exist for these data, so that an econometric estimation of the relative real amounts of bad and good money in the hands of the public as a function of the rate of inflation is only possible in exceptional cases. There exist, however, some rough estimates for the real amount of stable money in

Germany in 1923, i.e., shortly before the monetary reform of November 15, 1923. Young (1925, vol. 1, p. 402) mentions that according to the 1924 report of the second committee of experts the value of foreign bank notes held in Germany at the end of 1923 amounted to about 1,200,000,000 gold marks.

Beusch (1928, p. 8) reports that

> The substitution of the domestic currency by foreign media of payment progressed everywhere ... In August (1923) this sum was estimated to amount to 2-3 billion gold marks. If this is correct, then the value of foreign currencies in German economic transactions was nearly ten times as large as that of the circulating paper mark notes (my translation).

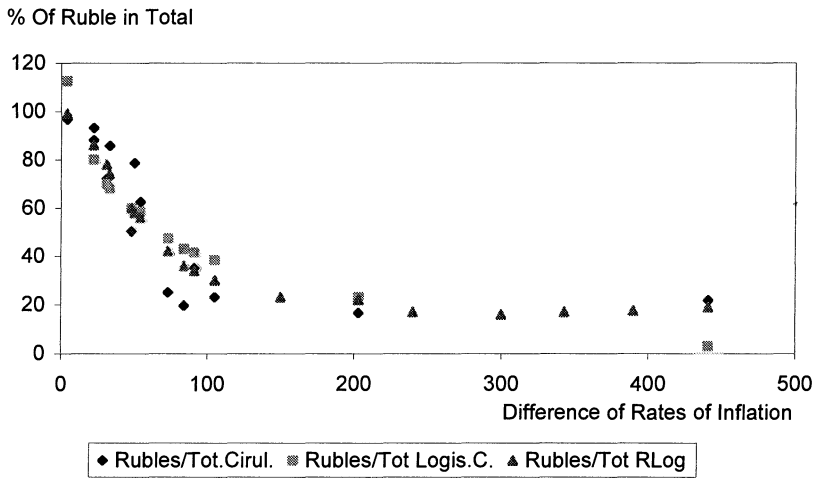
Currency substitution has also played a dominant role in all hyperinflations in the second half of the 20th century. For instance in Zaire (Congo):

> Currency substitution presumably continued to develop at a rapid pace during this period: by end-1993, the stock of new zaires in circulation was worth only US $ 46 million at the parallel market exchange rate, down from US $ 158 million at end-1992 and more than US $ 300 million at end-1989. Rough estimates suggest that the circulation of foreign banknotes – primarily U. S. dollars, but also CFA francs in the provinces next to BEAC member countries and Zambian Kwachas in southern Zaire – probably rose to the equivalent of US $ 300-400 million in Zaire (Beaugrand 1997, p. 5).

It has been stressed that data on currency substitution are mostly missing for hyperinflations, since governments are interested and take every effort to prevent such a development. As a consequence it is not possible to analyse this process quantitatively. We know, however, of a few remarkable exceptions, one of them in the Soviet Union. At the end of 1922, the Soviet government during the hyperinflation introduced, besides the circulating ruble notes, more stable *chervonetz* notes which were not issued by the treasury, but by the newly founded State Bank (for more details see Bernholz 1996). The introduction of the chervonetz was undertaken by empowering the State Bank, founded in 1921, by decree of 11 October, 1922, to issue banknotes denominated from 1 to 50 chervonetz, with one chervonetz supposed to be equal to 10 pre-war gold rubles. A coverage of the new banknotes to the amount of 25% in precious metals and stable foreign exchange was prescribed; 75% of the banknote circulation had to be balanced by short-term assets and loans, which could be easily called back (Griziotti Kretschmann 1928). It is important to realize that the Treasury continued to issue the rapidly inflating ruble notes, since it was not able at that time to cover expenditures by ordinary taxes and non-inflationary borrowing. Note also that the exchange rate between the two currencies was, on the whole,

freely determined in the market, and that the smallest denomination of the chervonetz was so great that it prevented full currency substitution. Finally, there remained a relatively small inflation also in terms of the chervonetz currency.

In Figure 5.1 the dependence of the degree of currency substitution on the difference of the rates of inflation in the ruble and chervonetz currencies is depicted. Moreover, two other sets of values have been drawn: one based on a logarithmic and one on a logistic regression function. The latter has been used to account for the fact that the share of the real stock of ruble notes in total real note circulation cannot exceed 100%. As one observes, this is not the case for values estimated with the logarithmic function.



Rubles Issued by Treasury, Chervontsi by
State Bank 1 Chervonetz = 10 Gold Rubles

Notes: Rubles/Tot.Circul.: Share of real ruble note circulation in total real note circulation; Rubles/TotLogist.C. and Rubles/TotRLog: Values of share calculated from the logistic and logarithmic regression functions. Sources: For cost of living indices in 1923 rubles and in chervonetz from November 1922 until October 1923: Griziotti Kretschmann (1928); for November 1923 to February 1924: Griziotti Kretschmann (1925). For other data: Katzenellenbaum (1925).

Figure 5.1: Hyperinflation in the Soviet Union Sbstitution of Ruble by Chervonetz, 1922-1924 During Soviet Hyperinflation, 1922-24

As can be seen from the figure, the share of the strongly inflationary ruble currency as a percentage in total real note circulation decreases strongly with the difference of the rates of inflation. And the values calculated from the logistic and logarithmic regression functions show that this relationship is highly significant.

It should also be observed that the rate of ruble inflation has to increase because of the currency substitution through the chervonetz. For in this case the real value of the circulating ruble notes shrinks, which must lead, given a constant or even increasing issue of rubles to finance the budget deficit, to a higher rate of inflation in terms of the ruble currency, whereas the opposite holds in terms of the chervonetz currency.

6. OTHER REASONS FOR LONG-TERM SWINGS OF EXCHANGE RATES

In the last section we have argued that network effects and fines and penalties imposed by governments prevent currency substitution if the difference of the rates of inflation remains moderate. We have also stressed that this statement is supported by the empirical facts. It thus remains to ask which factors could bring about the undervaluation of currencies suffering from moderate inflations which are, however, higher than those experienced by the main trading partners. Moreover, as can be seen by studying the example of Figure 6.1, large and long-lasting swings around PPP have also been present in cases where differences of inflation played a minor or even negligible role.

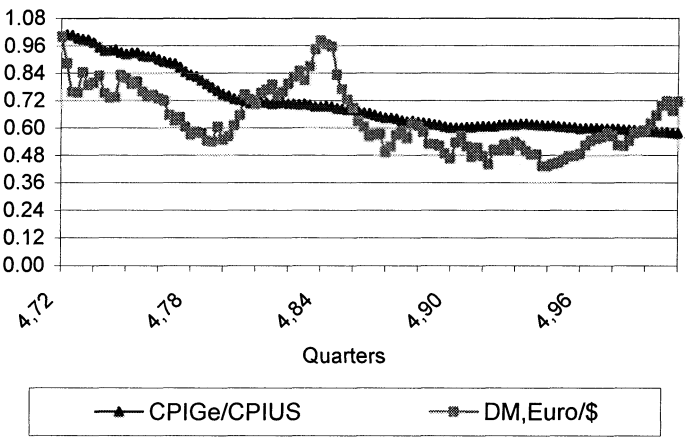


Figure 6.1: Exchange Rate $/DM and Purchasing Power Parity

In considering the figure, it should be mentioned in passing that the present weakness of the Euro vis-à-vis the US $ cannot be interpreted as showing that the former will be a soft currency. For the movement of the exchange rate which we observe since its introduction remains well within

the range which was characteristic of the DM/$ relationship since the fall of the Bretton Woods System. It amounted in the last quarter of 2000 and amounts at the moment, to about 17%, which is still smaller than the maximal over- and undervaluations of the $ vis-à-vis the DM of about 30%. This is also a figure which could be observed in many historical examples, of which some have been described in Section 4. Moreover, the strengthening of the $ began already in 1994, and not in 1998, with the introduction of the Euro.

Flexible exchange rates are influenced by many factors, since they are nothing more than the price of one currency in terms of another. As a consequence, their movements have escaped many efforts of prediction or even explanation. Let me therefore just mention a few of the most important factors which may be working besides high inflation differentials. First, a change of the rate of expansion of the money supply seems to have an influence, as already implied by the Dornbusch (1976) model. Second, different growth rates of real GDP's, interest rate differentials and capital movements have been mentioned as playing a major role in determining exchange rates. In looking at the latter factor, we should, however, realize that net capital movements have always to be equal to the balance of current account.

Ex ante planned gross capital movements can, therefore, only influence the exchange rate. Planned capital exports surpassing planned capital imports, or vice versa, have to be balanced by a rising or falling exchange rate equating the remaining difference to the balance of current account. But though it follows from this that planned capital movements may be of great importance in explaining deviations from PPP, we should, from a historical perspective, be cautious in over-stressing their importance. For, as already mentioned, divergences of about 30% can be found rather early, for instance in 18th century Sweden, when planned gross capital movements were presumably much smaller.

Let us finally return to the question as to which factors may cause the overshooting of the exchange rate in cases of moderate inflation. First, the acceleration of the growth of the money stock may be important soon after the change has been initiated. Second, capital movements may play a role. Business firms and especially individuals who are regularly involved in international transactions may decide to keep a greater part of their assets in more stable currencies. They may accelerate foreign payments, or lengthen the period before they pay domestic obligations. That is, the terms of payment may change. Note that these economic agents are far less hindered by the network effect and by government restrictions than those only involved in domestic business relations. It is thus not surprising that the historical evidence shows that the use of foreign money spreads with increasing rates of inflation from the foreign-related sectors of the economy to other sectors, except, of course for countries which were rather isolated

from the world, like America during the War of Independence, the Confederate States, and China during the Second World War.

7. CONCLUSIONS

We have shown in this essay that strong and long-lasting swings around purchasing power parities have been a characteristic of flexible exchange rates in all the historical cases which we have studied, beginning with the 17th century. Indeed, there seems to exist evidence that such swings occurred already during the Roman inflation of the 4th century and also during the Mongol (Yuan) and Ming paper money inflations in China from the thirteenth to the fifteenth century (Bernholz 1997). Moreover, the phenomenon of overshooting can even be observed for metallic currencies, if they were based on different metals like gold, silver and copper.

In most of the cases considered, inflations led to an undervaluation of the respective currency, an undervaluation which ended with the return to stable monetary policies. This is especially true for high inflations. Though only a sample of all hyperinflations has been studied here, the conclusions drawn hold also for other high inflations.

But long-term swings of flexible exchange rates around PPP are not only caused by differences in inflation, as demonstrated for the relationship of the DM and Euro vis-à-vis the dollar. Consequently some of the other more important reasons for this phenomenon have been discussed which have been mentioned in the literature.

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Discussion

Peter Bernholz's

LONG-TERM FLUCTUATIONS OF REAL EXCHANGE RATES WITH EMPHASIS ON THOSE CAUSED BY INFLATION

by Nissan Liviatan
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This paper covers a long stretch of history from the Roman Empire in Europe until modern times, and in a way it's reassuring that the economic laws work throughout history. I would suppose that the law of supply demand worked since the beginning of the world. But I am not too sure whether the "overshooting hypothesis" also applied in the times of the Roman Empire. But this seems to be the case for most of the episodes discussed in the paper, and especially in the case of hyperinflations. We see that when we have a very high inflation, we also have a real depreciation, which is just what the "overshooting hypothesis" would suggest, although one has to make some adjustment to this model, which is in terms of levels, and one should convert it to terms of rates. But this is not such a big problem.

Thus, I would say that it seems that the reason that hyperinflations exhibit the property of overshooting so strongly, is the fact that hyperinflations are, in a way, monetary shocks. Because the main shock to the price level is monetary, it does not come from productivity or something like that. It's a monetary shock and therefore it fits quite well in the Dornbusch model. The idea is really very simple, namely that the price level is more rigid than the exchange rate. So when the government pumps in money for whatever reason, then the exchange rate responds quicker and more strongly than the price level. And therefore you get overshooting. You get inflation, as a reaction to the monetary expansion, and you also get devaluation because the exchange rate reacts more strongly than the price level. This is what seems to be the basic economic reason for this phenomenon.

Now, there are a few exceptions and it may be that the exceptions are in a way more interesting than the rule. And the question is: what explains the real

appreciation in some of the cases? Bernholz suggests that this is the case with closed large economies that do not in fact make much use of the foreign exchange market. However, I doubt whether this is really a valid argument, because in all these economies, even if you don't have any trade, people are still using the Dollar or the Swiss Franc as a store of value in inflationary economies. Therefore, you would still suppose that either you should not have any change in the real exchange rate, or perhaps you should have another real depreciation of the currency. Now what could be a possible explanation for some cases where you have a real appreciation along with inflation? Well, one consideration is that you may have inflation hedges which are domestic, such as real estate which can be a hedge against inflation. And then, when you have both foreign exchange and also domestic hedges for inflation, it is not so clear theoretically that you should have a real depreciation. You may also have a real appreciation under certain conditions.

Now when I look for example at the case of Israel, that is, the inflationary episode in Israel over the period 1970-1985, you in fact see in the beginning a real depreciation. But, from 1977 on, you have a real appreciation. And one of the explanations for the real appreciation is that when you do not have a hyperinflation, but rather a chronic inflation that lasts for decades, you have all kinds of stabilization programs in the process. Some of these programs use the exchange rate as the nominal anchor, and then if you do not really eliminate inflation, you get an increase in the domestic price level, while the exchange rate is kept more or less artificially at a lower rate of devaluation. And then you get a real appreciation.

My second comment is as follows. One is that the exceptions mentioned in the paper are of large economies like China and Russia. Now large economies tend to use less foreign exchange than smaller economies, like islands in the Caribbean that are accustomed to use dollars. So the large economies develop all kinds of alternative hedges against inflation. And therefore this may be a possible explanation for the exceptions. Another distinction is between demand inflations and supply cost inflations. In the 1970s, we had these big energy shocks that caused inflation all over the world, and especially in Latin America. Now if one looks at the effect of a supply originated inflation, one gets the opposite result of the overshooting hypothesis. If you want to think about it, you can see that the effect of a supply shock is the opposite. It has the opposite effect on the real exchange rate than a demand shock. So it is perhaps worthwhile also to look into this distinction as opposed to hyperinflation, where the monetary shock dominates everything. But there are also protracted types of inflation that originate primarily not from the demand side but from the terms of trade and similar things. And then you may have the opposite of the overshooting result.

Chapter 4

WHY WHITE, NOT KEYNES? INVENTING THE POST-WAR INTERNATIONAL MONETARY SYSTEM

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> In Britain [Harry White] is too often thought of as some dim scribe, some kind of robot, who wrote... an inferior version of the Keynes plan – mainly to vex the British! Far different was the real man. He was a remarkable figure, who should be accorded an honorable place in British annals.
>
> Harrod (1951), pp. 537-38

> Harry White's role in the British loan negotiations is, like almost everything else in his career, mystifying.
>
> Skidelsky (2000), p. 424

1. INTRODUCTION

The design of the IMF and its role in today's international monetary system are largely the product of wartime negotiations between the United States and the United Kingdom in the run-up to the Bretton Woods conference of 1944. The two lead negotiators, John Maynard Keynes for the British and Harry Dexter White for the Americans, each developed an independent plan for a multilateral institution that would promote stable finance and growing international trade and would help prevent a recurrence of the disastrous mistakes made after the first World War. Where the two plans differed, the final outcome was dominated by the White Plan, not that of Keynes.

Leaving aside the technical and structural issues, three differences in the two plans were particularly significant. First, White's IMF was to be smaller than Keynes's and would allocate its scarce resources selectively rather than making them freely available to members on demand. Second, White's IMF would lend national currencies rather than a newly created international asset (Keynes's "bancor"). Third, White's IMF would be a more multilateral institution, rather than one designed and dominated by two "founder-States," as envisaged by Keynes. Both the process and the outcome at Bretton Woods represented compromises between these two initial visions, but the British gave up far more than the Americans. Why was Keynes so unsuccessful?

In Washington Lord Halifax
Once whispered to Lord Keynes:
"It's true they have the money bags
But we have all the brains."[2]

The conventional wisdom about Bretton Woods is that the British, led by the greatest economist of the twentieth century, had the right ideas about how to design the institutions that would shape the international monetary system after the war. The Americans, however, had the economic power, and they used that power to control the outcome. Like all oversimplifications, this one has a certain credibility, but it is far from conveying the full story.

Both the Keynes Plan and the White Plan contained much of value, and both contained flaws. The final product – the Articles of Agreement for the IMF drafted at Bretton Woods – was an improvement over both plans, but it too contained flaws. White, of course, was working to promote US economic and political interests, just as Keynes was focused on British interests. That White's conception of the post-war system essentially prevailed is attributable only in part to the superior economic strength of the United States. Also important was the fact that White understood that American ascendancy depended on a multilateral and multinational regime of open trade and finance. British aspirations, in contrast, depended on perpetuation of the system of Empire preferences and – despite American opposition to that system – development of a bilateral economic partnership with the United States. The hopelessness and inconsistency of that position doomed the Keynes Plan from the outset.

This paper begins by sketching the importance of Harry Dexter White as a US government economist and explaining the background to his work on the international monetary system. It then looks at the similarities in and contrasts between White's and Keynes's conceptions and draws a few lessons for our understanding of today's system.

2. WHY WHITE?

In stark and utter contrast to Keynes, White may be the least understood major economist in history. For the most part, his legacy is in institutional practice rather than publications. Throughout much of his career, his ideas were filtered through bureaucracy and diplomacy and were seldom subjected to academic peer review. To uncover his thoughts and contributions requires sifting through masses of internal government memorandums. Those documents cover a wide variety of economic policy issues, but almost all were written in response to crises during the depression and war years of the 1930s and early 1940s.

2.1 Backgound

Harry White was a second-generation American, born in Boston in 1892 to immigrants from Lithuania. Aside from one term at the Massachusetts Agricultural College in Amherst, he began his university education only at the age of 29, after stints in his father's hardware store and in the US army during World War I. He studied at Columbia, then at Stanford where he completed bachelor's and master's degrees in economics, and finally at Harvard, where he completed a Ph.D. under Frank Taussig. His dissertation, on the French international accounts, won the David A. Wells prize and was published by Harvard University Press in 1933. Now 40 years old, White taught briefly at Harvard and then took up a position teaching at Lawrence College in Wisconsin. In June 1934, he accepted an invitation from Jacob Viner to spend the summer at the US Treasury in Washington on a special survey of monetary and banking practices. That led to a permanent job that culminated in White being placed in charge of all international analysis in 1941, officially becoming Assistant Secretary (effectively the chief economist in the Treasury) in 1945, and finally becoming the first US Executive Director in the International Monetary Fund (effectively the number two official in the institution.)[3] His health then deteriorated, and he died of a heart attack in 1948.

White's published work, other than his dissertation, is limited to brief bursts. As a graduate student, he contributed to the third edition of Taussig's empirical work on tariffs by evaluating the ability of several US industries to compete in world markets without tariff protection (Taussig, 1931, Part V). While in Wisconsin in 1933, he wrote a review article for the *Quarterly Journal of Economics* at Taussig's request, on Gottfried Haberler's Der Internationale Handel and Bertil Ohlin's Interregional and International Trade (White, 1934). He then was otherwise occupied until 1943, when he presented a paper on post-war financial arrangements at the annual meetings

of the American Economic Association (White, 1943). After the Bretton Woods conference, he wrote at least two articles on the IMF (White, 1945, 1947). Those last three papers, however, were expositions of the case for creating the IMF and the World Bank, not analytical work. None of White's published articles reveals his views on international monetary policy in any depth. For that, one needs to turn to the extensive collection of his Treasury writings in the archival collections at Princeton University and the US National Archives, especially for the period 1934-38, when White was an economic analyst and not yet a bureaucrat with a subordinate staff to draft papers for him.[4]

Given the inaccessibility of White's work, it is not surprising that his role has been largely neglected except as an architect of the IMF. Two aspects of this neglect warrant examination: White as an early Keynesian, and as an international monetary economist.

2.2 White as a Keynesian

Most surveys of the development of counter-cyclical fiscal policy in the United States have either totally ignored White (Laidler, 1999) or have mentioned him *en passant* as having been an influential New Dealer who was in turn influenced by Keynes. Roy Harrod (1951) noted that White "had very solid intellectual quality and was an ardent admirer of Keynes' economic work" (p. 538). Robert Lekachman (1967) also noted Keynes's influence on White, on both fiscal and exchange rate policies (pp. 105-7). Herbert Stein (1969) included White in a list of US government economists who supported the use of counter-cyclical fiscal policy to combat the recession of 1937-38 (p. 102).

The major exception to this minimization has been June Flanders (1990), who recognized White's importance as a contributor to economic thought. Based on a textual exegesis of his Ph.D. dissertation (pp. 236-41), she concluded that he was a "late classical" economist (along with his teachers, Taussig and Viner) who "comes closer to Keynesian macro analysis than any of the others in the group" (p. 240). She noted in particular that White's analysis of the effects of an exogenous real shock on trade flows prefigured the "income" or absorption approach in contrast to the prevailing acceptance of the price elasticities approach.

A recent paper by David Laidler and Roger Sandilands (2002) has resurrected a 1932 memorandum co-authored by Lauchlin Currie, P. T. Ellsworth, and White, which clearly sets out a scheme for combating the depression through vigorously expansionary monetary and fiscal policies. Laidler and Sandilands argue that this memorandum illustrates the intellectual origins at Harvard of thinking on counter-cyclical macroeconomic

policy, and that the implicit model was more monetary than "Keynesian" (i.e., the memorandum suggested that fiscal expansion would stimulate the economy via its effect on the supply of money). Although it is impossible to determine the separate contributions of the individual authors, the memo definitively overthrows the notion that White's views on fiscal policy merely reflected those of Keynes.

2.3 White on International Finance

White's views on international monetary economics also appear to have developed independently of Keynes and to have been influenced particularly by another of his Harvard teachers, Allyn Young. Unfortunately, White's thinking on these issues evolved erratically, and his writings do not reveal a fully consistent position. His fundamental view was that monetary and exchange rate policy should be subjected to rules, but he occasionally suggested that those rules should be applied with enough flexibility to enable central banks to opt out when necessary to respond to extreme circumstances.[5] He first articulated this "fixed but adjustable" view, which prefigured the recent development of state-contingent monetary policy rules (Flood and Isard, 1989), in his 1934 Treasury report on the role of gold. Viner had requested the report in the wake of the January 1934 pegging of the dollar at the devalued rate of $35 an ounce. In a 400-page report completed in three months, White concluded that adherence to the gold standard was a useful disciplinary device for monetary policy as long as the central bank was prepared to change the exchange rate in "periods of stress" ("Selection of a Monetary Standard ...," 1934, p. 232).

Keynes articulated a similar proposal for state-contingent policy rules the following year, in an article published in *Lloyd's Bank Monthly Review*. He argued that central banks should try to agree on levels for exchange rates and thereby for parities against gold that would equilibrate the balance of payments; that they should maintain those parities within a limited range through intervention in spot and forward markets; and that they should be mindful of the need to abandon the parities *in extremis*.[6] "Rigidly fixed parities" would be eschewed in favor of central bank collaboration, subject to an "ultimate individual discretion" for each collaborator to devalue the currency "to relieve either a sudden and severe or a gradual and continuing strain." In contrast to White, however, Keynes explicitly ruled out the use of monetary policy as a first line of defense to relieve such a strain. The rate of interest, in his scheme, was assigned to the goal of full employment: to internal rather than external balance (Keynes, *Collected Writings* XXI, pp. 360-69).

After White's temporary assignment turned into permanent employment at the Treasury, he developed his argument further. A managed currency, without gold or another effective anchor, was a dangerous idea, he argued in January 1935 ("Managed Currency and the Gold Standard"), because it could encourage countries to use the exchange rate to gain a trade advantage. This danger was precisely what many experts in other countries feared had been Roosevelt's intention in driving up the price of gold in the latter months of 1933. Although White did not explicitly criticize the earlier policy, he firmly endorsed the return to gold in 1934. More importantly, he was already suggesting the need for international rules or agreements on when adjustments in exchange rates were appropriate and on how they should be adjusted.[7] His views, however, were still unsettled, for a few months later he argued in a lengthy memorandum ("Recovery Program...," 1935) that recovery from the depression would require the active use of exchange rate policy, because–though White did not use this terminology–exchange markets could not be relied upon to restore purchasing power parity following large country-specific real shocks.

White's views on the policy role of the exchange rate developed more clearly in the course of 1935. In an August memorandum, he argued against most measures to stimulate exports, on the grounds that they were neither necessary nor sufficient for a resumption of economic growth and anyway were unlikely to work. Only two proposals for stimulating exports had any merit: an international agreement to stabilize exchange rates and an expansion of official loans to foreign governments ("Why and how exports should be increased," 1935). He worried, however, about the "potential absence of national autonomy in the determination of monetary policy" that would be a by-product of an international monetary agreement ("Monetary Policy," 1935, p. 15). A few months later, therefore, he noted the importance of creating a dollar zone to compete against the sterling area and weaken the influence of sterling as a constraint on US policy. Currency stability, not the relative size of the foreign exchange market, was to be the cornerstone of his strategy for developing the international role of the dollar:

> Though it doesn't matter very much whether New York or London does the most foreign acceptance business, it is important to have as many currencies as possible linked to the dollar rather than to sterling, if the rate between dollars and sterling is not fixed. The more currencies tied to the dollar (i.e., exchange rates fixed to dollar), the less power will British authorities have to influence American monetary policy. The more international business a country does, the more likely will it be to attract other currencies in its orbit of influence, and the more currencies it attracts the greater will be its international business ("The United Kingdom...," 1935, p. 24).

White's experience with the weakness of the US economy in the 1930s made him curiously insecure about the future role of the dollar in the international economy. He failed to anticipate that the dollar would become the premier currency in the post-war world and that it would soon constitute the bulk of international reserve assets held by central banks all over the world. That role, he believed, would continue to be played by gold. In 1940, he began work on a lengthy manuscript on "The Future of Gold," which he seems to have intended to be the culmination of his thinking on exchange rate policy. He worked on it sporadically for at least four years, but he never brought it to a publishable stage, and much of it remained unrevised from 1940.

"The Future of Gold" argued that the only way any country could induce investors to hold liquid claims on it for extended periods was to create complete confidence that its currency would not be devalued in the foreseeable future. Since no major country would be willing to surrender its sovereignty over the valuation of its currency, the ability to create such confidence was limited. Investors therefore had and would continue to have a preference for gold over currencies or other liquid assets, though they could be induced to hold redeemable currencies if the risk of devaluation was not too great. "Many decades at least will have to pass before many countries will elect to keep their reserves in the form of some foreign paper currency never redeemable in gold rather than in the form of gold or currency redeemable in gold" (Section IV, p. 6). Moreover, he rejected on time-inconsistency grounds the idea that countries could credibly effect a cooperative agreement to fix exchange rates without an anchor to gold. Confronted with the possibility of devaluing (or imposing exchange restrictions) as the "lesser evil," rather than contracting the economy, "the sovereign power will usually elect to pursue the lesser evil" (Section IV, p. 4).

Despite White's occasional skepticism about the viability of international currency agreements, he generally favored multilateral cooperation. Here his natural instincts were reinforced by his practical experience in trying to manage the exchange rate between the dollar and the pound sterling. In the spring of 1935, White made his inaugural overseas trip for the Treasury, where he first met Keynes and other British officials. He seems to have made a bad impression on many of them (Drummond, 1981, p. 192), and he may have been overly encouraged by Keynes's apparent desire for a "de facto stabilization" of sterling against the dollar and thereby against gold (see "Personal Report …," 1935, and "Summary of Conversations," 1935). A year later, during the negotiations that would lead to the Tripartite Agreement among the United States, the United Kingdom, and France, White's considered opinion was that the exchange rate between the dollar and the pound (then hovering around its historic parity of $4.86) was appropriate, while the French franc had to be devalued. He worried, however, that the

British might not agree and would retaliate against a franc devaluation by depreciating sterling against the dollar ("French Devaluation," 1936). UK Treasury officials reacted bitterly but helplessly to the US position, arguing that at $4.86 the pound was overvalued (while acknowledging that it was undervalued relative to the franc).

The difficulty was not that opinions differed on the desirability of stabilizing rates; it was that they differed on the equilibrium level. The Tripartite Agreement, weak though it was in its mechanisms for further collaboration and enforcement, helped temporarily to resolve the Anglo-American dispute by limiting the size of the French devaluation and thereby the size of the effective revaluation of the pound. More importantly, it reinforced in White's mind the benefits of multilateral agreements over bilateral negotiations with the British.

Another issue on which White developed his views early and independently from Keynes, and which came to have great importance later on, was the control of international capital flows. White's Ph.D. dissertation demonstrated that the balance of the effects of capital exports on the pre-war French economy was not unambiguously positive. Given the possibility of harm from unbridled flows, White concluded that "some measure of the intelligent control of the volume and direction of foreign investments is desirable" (White, 1933, pp. 311-2).

"Intelligent control" implied channeling rather than stopping such flows, and it was a weapon that White thought should be held in reserve and not applied indiscriminately. His 1934 report to Viner argued that capital controls were normally unnecessary, but that legislation should be in place that would enable the Federal Reserve to impose and enforce controls quickly when they were needed to prevent a speculative flight of capital. He was fully aware of the "many channels of evasion" that made complete control impossible, but he argued that the magnitude of capital flight could be reduced enough to protect the country's reserve position ("Selection of a Monetary Standard," 1934, Chapter 17). Similarly, he initially expressed doubts about the necessity of controlling the massive gold inflows to the United States, even though such flows were potentially costly ("Gold Imports into the United States," 1935).

White's enthusiasm for capital controls perked up in the second half of the 1930s. As capital continued to flow into the country in 1936, he proposed an elaborate scheme to impose 100 percent reserve requirements on foreign-owned bank deposits, coupled with a stamp tax on securities transfers to foreigners to limit evasion ("Increase in Reserves...," 1936). But his clearest statement of the rationale for controls came in 1938, in response to the ongoing depreciation of the French franc, which White argued had not helped the French economy. Of the three options under consideration for policies to strengthen the French balance of payments–further depreciation, import

controls, or capital controls–White argued that "the imposition of exchange controls over non-commercial transactions ... seems to us now, as it has in the past, to be the best of the bad choices" ("What should our answer be...," 1938). This second-best reasoning eventually was carried over into White's 1942 blueprint for a Stabilization Fund. Although the elimination of foreign exchange restrictions was a primary purpose of the Fund, the plan acknowledged that "there are situations in which many countries frequently find themselves, and which all countries occasionally meet, that make inevitable the adoption of controls" (Horsefield, 1969, p. 63).

In this domain, what was second best to White was second nature to Keynes. In contrast to White's acceptance of controls as occasionally to be tolerated, Keynes regarded them as essential for stable international finance.[8] His 1942 plan for an International Clearing Union cited the facilitation of capital controls as one advantage of the proposal, since it would encourage international cooperation on controls, "which we have now gone a long way towards perfecting" in Britain. To that end, it would be "vital" to distinguish "floating funds" and "speculative movements or flights" from "genuine new investment" and flows that "help to maintain equilibrium" (Horsefield, 1969, p. 13).

Before leaving the subject of White's views on controls, it is necessary to clear up a persistent misunderstanding about his opinion of the Soviet economic system. The only textual support for Robert Skidelsky's recent assertion that White "greatly admired Soviet planning" (Skidelsky, 2000, p. 242) is a 1933 letter to Taussig, in which White reported that he was studying Russian "in the hope that I may get a fellowship which would enable me to spend a year chiefly in Russia. There I should like to study intensively the technique of planning at the Institute of Economic Investigation of Gosplan" (quoted in Rees, 1973, p. 39). The context of this proposal, explained in the same letter, was White's concern about a growing movement in the United States for protectionism and for "virtual economic self-sufficiency." How, he wondered, could the United States protect itself from external shocks "without sacrificing either stabilizing influences of int. econ. relations or the gains from for. trade. The path, I suspect ,may lie in the direction of centralized control *over foreign exchanges and trade*. I have been ... reading and thinking about the problem but my opinion is as yet unsettled" (emphasis added). Before long, as the discussion above has shown, his opinion settled on a combination of monetary stability and capital controls as the solution to this problem. The Gosplan never again figured as an influence, although White was tireless in his opposition to protectionism throughout the 1930s.[9]

Like President Franklin D. Roosevelt and Treasury Secretary Henry Morgenthau, Jr., White did not believe that the Soviet Union was interested in territorial expansion. It followed that Nazi Germany was a more direct threat to the United States and its allies. In one of his last writings, he

admitted that neither he nor "any responsible official of the member governments" [of the IMF] had foreseen in 1944 the post-war political split and tensions between the United States and the Soviet Union" ("rough draft of a statement...," 1948, p. 4). He was, however, cognizant of the dangers posed by Russia's totalitarianism and its "ideological aggression," which made poor countries particularly susceptible to the appeal of international communism. This concern was doubtless a motivation for his longstanding interest in US economic and financial support for Latin America, which dated from the mid-1930s and continued right up to the time of his death in 1948.[10]

3. WHY NOT KEYNES?

On most major issues of economic policy, Keynes and White held similar views. On domestic macroeconomic policy, of course, both were "Keynesian" in the most common sense of that term: they favored the active use of counter-cyclical policies to maintain high levels of employment. Internationally, both men favored fixed but adjustable exchange rates in support of open trade in goods and services, protected by a degree of control over capital flows. But they also differed importantly on specific issues, especially in the framework for post-war planning. On balance, White tended to be more realistic, partly because Keynes was forced to fight a rearguard battle to prevent Britain from losing too much control over its finances and partly because White placed greater stress on price stability and monetary discipline as a policy goal.

The two men collaborated closely in the final stages of designing the IMF, but their initial plans were independent. White began sketching a framework in 1941 and produced an initial draft in January 1942. He did not see Keynes's plan for an International Clearing Union until August. Nonetheless, he may have been influenced by Keynes's thinking on international monetary reform. A number of elements in the design of the IMF first appeared in a series of newspaper articles by Keynes that was published in pamphlet form in the United States in 1933. The question once posed by Skidelsky, "Did Harry Dexter White read the American edition of *The Means to Prosperity*?" (Skidelsky, 1992, p. 472), is unanswerable, but it would be reasonable to suppose that he did. Second, Keynes spent three months in Washington in mid-1941, during which time he held extensive discussions with US Treasury officials, including White, on bilateral financial assistance for the British war effort. If either man was already thinking about post-war monetary planning, he might well have raised the issue informally with the other, though no documentation supports such a conjecture.[11] Nonetheless, whatever cross-fertilization might have occurred, it is clear that they maintained different

positions on some issues both before and after they began intensive discussions.[12]

3.1 Keynes as Defender of the Empire

As Robert Skidelsky stresses throughout the final volume of his biography, Keynes spent much of his energies during the war "fighting for Britain," not against the Axis but against the ascending economic power of the United States. The United Kingdom needed substantial financial support from the United States not only to fight the war but also to rebuild its economy after the war. British officials also wanted to perpetuate the system of Empire preferences within a trading zone that excluded the United States, and they wanted to have as much time as possible to unblock the more than $13 billion in sterling balances that countries had accumulated in London during the war. Both of those objectives clashed with US economic interests and were strongly opposed by the Roosevelt administration. Keynes was forced to negotiate with the US Treasury to gain its financial support while conceding as little as he could on trade and currency restrictions.[13]

White knew the strength of his hand, and he did not shrink from playing it to maximum advantage. He had no desire to harm or weaken the UK economy, but he (and other US officials) interpreted its circumstances and interests differently from Keynes (and other British officials). In White's view, Britain would benefit as much as any country from "fair trade and currency practices. ... With expanded world trade, British exporters will find better markets. But it will take several years..." ("Anglo-American financial Agreement," 1946, p. 6). He made three specific objections to British arguments.

First, White did not accept British projections of their post-war financial needs, and therefore he was reluctant to push within the administration for large-scale assistance. He readily acknowledged Britain's need for credits, but not of the magnitude that was being requested and not on such generous terms. Moreover, as he told Morgenthau, the United Kingdom "could absorb endless billions of dollars, and any vague commitment to England's future prosperity would threaten both the financial and political position of the United States in the postwar world."[14] White's overly optimistic view about British prospects for economic recovery conditioned not only the terms of bilateral assistance but also the scale of the multilateral financial institutions that were to be created. Indeed, White saw the IMF and the World Bank as a multilateral and far more effective alternative to bilateral financial assistance to Britain. His 1945 article for *Foreign Affairs* argued that a large-scale bilateral loan would "completely miss the real postwar problem" (p. 207):

> To facilitate the restoration of balance in her international accounts Britain needs an expansion of world trade. A loan to Britain ... will not of itself help significantly with Britain's problem, or with the world's problem of establishing a sound postwar pattern of international payments. Such a loan might burden Britain with dollar debt while making no real contribution toward balancing Britain's international payments. On the other hand, the Fund and the Bank, by providing the favorable conditions necessary for expanding world trade and investment, would be of real help..." (ibid.)

Second, while White supported Britain's need for a gradual unblocking of sterling balances, he was adamant that this task should be concluded without undue delay. As he wrote in his 1942 plan for the IMF (Horsefield, 1969, p. 47):

> Balances owned by residents of another country which have been blocked because holdings of gold and other liquid foreign exchange assets are inadequate ... will constitute after the war one of the danger spots to monetary stability, and to resumption of liberal trade policies. If the Fund can eliminate that danger spot it will have justified its existence–even were it to accomplish little else.

Third, and most fundamental, White did not accept the legitimacy of Empire trade preferences, nor of the currency restrictions that supported them. He was sitting on an enormous stockpile of gold that had been accumulating ever since Roosevelt had fixed the price of gold at $35 an ounce in 1934, and he was determined to reduce it through a rapid build-up in international trade as soon as the war was over. Neither Congress nor the US business sector would ever accept a policy of encouraging imports unless it was matched by an opening up of world markets to US exports. The major obstacle was the way Britain was running its financial Empire. Keynes was determined to preserve that system, but White was just as determined to build a more open, multilateral system.

Keynes had no chance of ever winning all of these battles. Had he been authorized to sacrifice either US bilateral aid or British trade preferences, he might have been able to make substantial gains on the other. By trying to win on both fronts, he had too little to offer on either. This is not to suggest that Keynes was unwilling to negotiate. Both on post-war bilateral assistance and on the design of the IMF, he showed a great deal of flexibility and a willingness to challenge the positions of his own government. But he had too few opportunities to win the major battles.[15]

The effect of these different views and positions on the international monetary system was that White was more radical and far-reaching than Keynes in the effort to establish multilateralism and currency convertibility. Keynes's resistance to multilateralism was grounded in the need to preserve

Britain's special status through its central role in the Empire and its bilateral relationship with the United States. He envisaged the Clearing Union primarily as an agreement between the two "founder-States," with other countries joining it as they wished by complying with specified conditions (see §17(1) of the 1942 Keynes plan; Horsefield, 1969, p. 6). "Russia, which might be a third founder, if she can be a party to so capitalist-looking an institution, would need special consideration" (§55; ibid., p. 15), he wrote in paying lip service to the Soviet Union's importance in the Grand Alliance. But even Russia played no significant part in his thinking, and the paragraph continued: "This [founder-State] approach would have the great advantage that the United States and the United Kingdom ... could settle the charter and the main details of the new body without being subjected to the delays and confused counsels of an international conference."[16] Moreover, he wanted the two founder-States to be completely in charge of running the organization: "The management and the effective voting power might inhere permanently in the founder-States." And he was even nostalgic enough to imagine that the headquarters would be situated in London (ibid.).

In contrast, White "hoped that some time soon, representatives of various interested governments will meet in conference to explore the possibility of an international stabilization fund and bank" (1942 White Plan; Horsefield, 1969, p. 39). In part, his desire for a multinational conference may have been intended to limit the effect of Keynes's intimidating presence. Canadian, French, and Indian delegations would be particularly useful buffer zones and distractions. More deeply, though, White wanted to ensure the active participation of the Latin American republics and–most of all–of the Soviet Union. For Keynes, Soviet involvement was almost immaterial, because Russia had little effect on UK economic interests and would matter little for the success of the international financial institutions. For the United States, and for White, the Soviet Union was by far the most important partner country: not in trade or financial terms, but in terms of its strategic dominance in determining post-war peace and prosperity.[17] Russian involvement in designing the IMF would clearly promote US policy goals as they were perceived in 1944.[18]

Although a principal goal of White's planning for the post-war system was to re-establish currency convertibility, he recognized that this goal would take years to accomplish. His Stabilization Fund, therefore, was designed for a world dominated by bilateral payments arrangements. A member country could borrow a specified currency from the Fund only "to meet adverse balance of payments *to the country* whose currency is being demanded" (Horsefield, 1969, p. 41; emphasis added). The evolution of the US dollar and other reserve currencies as vehicles for multilateral settlements was not yet in the picture.

3.2 The Secondary Role of Inflation Prevention

With regard to price movements, Keynes's primary preoccupation throughout the 1930s and 1940s was the avoidance of deflationary pressures. This bias carried over to his thinking about the international monetary system (1942 Keynes plan, §12; Horsefield, 1969, p. 27):

> Just as the development of national banking systems served to offset a deflationary pressure which would have prevented otherwise the development of modern industry, so by extending the same principle into the international field we may hope to offset the contractionist pressure which might otherwise overwhelm in social disorder and disappointment the good hopes of our modern world.

In keeping with this goal, Keynes wanted his International Clearing Union to be an international lender of last resort. Countries should know in advance that the institution's resources would be available to them when needed, as long as they were willing to pay an appropriate interest rate. "Our view has been very strongly that if countries are to be given sufficient confidence they must be able to rely in all normal circumstances on drawing a substantial part of their quota *without policing* or facing unforeseen obstacles" (letter of 17 October 1943, to Jacob Viner; Keynes, *Collected Writings* XXV, p. 333; emphasis added). To create this confidence, he needed three components: an international currency to supplement the limited supply of US dollars and gold, generous limits on the amounts that countries could borrow, and automaticity in lending decisions. In all three domains, he faced opposition from White and other US officials, who were more concerned to avoid excessive credit creation.

First, an international currency. In Keynes's clearing union, central banks would pay subscriptions in gold and then would borrow in "bancor," an international currency that it could use only to settle debits against another central bank. Once created, bancor balances could not be redeemed on demand at the clearing union, but would be cancelled automatically when the borrowing country repaid its credits. Bancor thus was to be a form of "outside" money that would circulate in a closed economy limited to central banks. White's 1942 plan argued against introducing such an international currency, but it did accept that the International Bank – not the Stabilization Fund – should be given the power to issue notes against its gold reserves and that those notes should be denominated in an international unit of account (Horsefield, 1969, pp. 78-82). His 1943 plan extended that concept to apply to the Fund as well, but eliminated its store-of-value function altogether. White's "unitas" was a sop to Keynes's concept, without any of its substance.

Second, a large Fund. After the initial plans were both on the table, Keynes suggested that total quotas of the Fund should be set at 75 percent of

pre-war world trade (or around $38 billion). The usable portion, however, would be less than half the total (i.e., countries would normally be able to borrow only 25-50 percent of their quota). The more tight-fisted White suggested a Fund of "at least $5 billion," all of which would, in principle, be available (countries could borrow up to 100 percent of quota). Once they settled on the larger allowance for drawings relative to quota, Keynes settled on a figure of $12 billion as a reasonable target for a Fund that could combat the danger of deflation, or a bit more than double the size proposed by White. He also wanted the total to rise automatically each year in line with growth in world trade. Eventually, the US delegation at Bretton Woods agreed to a compromise total of $8.8 billion, to be reviewed only once every five years.[19]

Because the IMF was smaller than Keynes wanted and lacked an automatic mechanism for rising in line with the growth in world trade, it could not realistically fill the function of a lender of last resort, and the Fund would have to ration its scarce resources by imposing conditions on their use. The differences in magnitude might not seem all that significant to a 21st-century reader conditioned by news of $40 billion rescue packages, but the implications emerge clearly from the updating shown in Table 1.

Current Fund quotas, adjusted for the higher current limits on access, have approximately the same relationship to world trade as quotas had in 1947, but that ratio was only about half what had been intended at Bretton Woods (owing to a doubling of world trade in terms of US dollars between 1937-38 and 1947). To restore the relationship intended at Bretton Woods would require a bit more than a doubling of the existing quotas. To achieve the relationship desired by Keynes would require a quintupling of quotas. If Keynes was right about the requirements for a Fund that could create confidence in trade relations by serving as an international lender of last resort, then both White's Fund of 1944 and today's IMF fall well short. If White was right about the requirements for a lean Fund to discipline borrowers and avoid adding to inflationary pressures, then the IMF still reflects that vision.

As soon as the Fund began extending credits in 1947, White realized that he had been wrong in advocating such strict limits on the size of the Fund, because he had failed to anticipate the rapid post-war growth in the dollar value of world trade. To overcome what he now expected would be a widening shortage of Fund resources, he proposed to amend the Articles of Agreement "to provide an international medium of exchange to supplement the IMF resources for the purpose of making possible increases in international trade among the member countries" ("Proposal for Amendment...," 1948, p. 4). Each member country would get a special temporary increase in its reserves in the form of "Trade Dollar Accounts," which it could spend anywhere "except probably in the United States and a few other countries" (ibid.), but in the long run (after 15 years) it would have

to return the reserves to the Fund. The excepted countries would be those that opted out of the plan voluntarily.

Table I. IMF Quotas, Access, and World Trade
(in billions of US dollars)

	Trade (exports+ imports)	Quotas	Access	Access in Percent of Trade
1942 (White)	50 (pre-war base)	5.0	5.0	10.0
1943 (Keynes)		37.5	18.8	37.5
1944 (Bretton Woods)		8.8	8.8	17.5
1947 (ex-USSR)	100	7.5	7.5	7.5
2000 (actual, rounded)	12,000	300	900	7.5
2000 equivalent of White		400	1,200	10.0
2000 equivalent of Bretton Woods		700	2,100	17.5
2000 equivalent of Keynes		1,500	4,500	37.5

Unlike the 1967 amendments that introduced the SDR as an international reserve asset, White's proposal (which was not formally considered by the Fund's Executive Board)[20] assumed that recipients would spend the allocations rather than holding them as reserves. Indeed, it encouraged them to do so, provided only that they would have to repay the allocations in the long run (when he assumed that the dollar shortage would have been eliminated). His specific scheme would almost certainly have been unworkable: How could the genie be put back in the bottle? Nonetheless, it does show that White was implicitly aware that Keynes had been more prescient than he, and that he was trying to correct the problem that had resulted.[21]

Third, an automatic lender. Keynes envisaged that his clearing union would extend credit virtually automatically on demand. Excessive credit creation would be avoided by restricting these credits to short-term, self-liquidating loans, for which "the analogy with a national banking system is complete."[22] A borrowing country would be expected to use the loan proceeds "to effect a balance in its economic relations with the rest of the world" and would be subjected to an increasing rate of interest and eventually to policy conditionality if it failed to repay the loan within the specified time limit. Keynes acknowledged that "disciplining a misbehaving country" in this way would be difficult, but he argued that the task would be even more

difficult without a multilateral agreement (Keynes Plan, §5, §17, and §25; Horsefield, op cit. pp. 6-9).

White designed his Stabilization Fund to prevent disequilibrium pressures, and he took a more symmetric view toward the dangers of instability (1942 White Plan; Horsefield, 1969, p. 47). Because excessive credit creation could be just as damaging as a shortage (especially for the United States, as the major creditor country), his plan envisaged giving the Fund discretion to reject requests for loans if the staff was not "satisfied proper steps were being taken to restore equilibrium" (Horsefield, op cit., p. 52).[23] In other words, policy conditionality was a more basic and up-front controlling device in White's plan than it was in Keynes's. Moreover, because his Fund would be relatively small, it would have to ration credits rather than making them freely available. In contrast to the Keynes Plan, the Stabilization Fund would not have the means to be an international lender of last resort. Rather than depending on the good behavior of borrowing countries, White was prepared to put his faith in the "technical knowledge, careful examination and good judgment by the Fund's staff" (ibid.).

4. CONCLUDING THOUGHTS

In trying to sort out intellectual from geopolitical influences on the design of the post-war international monetary system, the historian faces a problem of observational equivalence. Those applying the "realist" approach to international relations would stress the fact that White represented the country with much the greater economic power and that his positions on most key issues seem to have been dictated as much by US economic and strategic interests as by his personal views. Those applying a more liberal-historical perspective would stress the broad consistency of White's intellectual development from his years in Harvard, through his efforts to promote financial stability and economic recovery in the 1930s, to his concern with developing a multilateral post-war system capable of avoiding the debacles that followed the first world war. Both approaches (see Waltz, 1979) help explain both White's view of international economic policy and his ability to have a dominant influence on the outcome. Both together are needed to reach a full understanding.

In the negotiations of 1943 and 1944 that led to the creation of the IMF, White's understanding and representation of US economic interests were particularly important in shaping an international monetary system based on the dollar and its link to gold. Philosophically, nothing in White's writings suggests that he would have opposed creation of an international currency on principle, as long as it was linked–flexibly–to a golden anchor. If the choice had been between the *pound* and bancor, he surely would have chosen the

latter. Similarly, US interests were paramount in White's insistence on limiting other countries' access to dollar credits. The United States would be providing most of the money in the Fund, and the only way Congress would approve the necessary legislation was to build in safeguards on how it would be used.

White's intellectual role came to the fore in two domains: his insistence on monetary stability as a disciplinary force and on multilateralism in international finance. Although White's belief in the importance of monetary stability dovetailed with the US interest in having an institutional structure that would discipline debtor countries more than creditors, his convictions on this point were deeply rooted. His unilateral introduction of the "scarce currency" clause in the draft Articles of Agreement for the IMF, which was intended to limit the ability of the United States to accumulate credit balances against the rest of the world, is readily understood in this light.[24] And White's personal convictions were even more important in the design of a multilateral institution that would help channel US interests to meet global objectives. The Roosevelt administration faced powerful congressional opposition by isolationist and hegemonic interests. A bilateral hegemony shared with Britain, as envisaged by Keynes, might have served the narrow economic interests of the United States nearly as well as White's multilateral concept, but it would not have promoted global progress to the same degree.

ENDNOTES

[1] The bulk of this paper was written while I was at St. Antony's College, University of Oxford, on leave from the IMF. A previous draft was presented at a conference on "The Open Economy Macromodel: Past, Present, and Future," held in Israel, in June 2001. I am grateful to Don Moggridge, Jacques Polak, Roger Sandilands, and conference participants for comments on that draft. The views expressed herein are personal and should not be attributed to any institution.

[2] Gardner (1957), p. xiii; cited as "found on a yellowing piece of paper salvaged from the first Anglo-American discussions...about postwar economic arrangements." Gardner found the note among White's personal papers at Princeton; its authorship was not indicated, but Dennis Robertson seems the most likely candidate.

[3] For more detailed biographies, see Rees (1973) and Craig (1999).

[4] White was named Director of the Division of Monetary Research at the US Treasury in March 1938. A majority of memorandums after that date were drafted initially by economists in the Division.

[5] For an overview on the history of the debate on rules vs. discretion in monetary policy up to 1930, see Laidler (2001). That debate split fairly cleanly between those favoring rules (including Alfred Marshall and Irving Fisher, who formulated alternative rules to the gold standard) and those favoring discretionary monetary

standards (including Knut Wicksell, Ralph Hawtrey, and Allyn Young, whose thinking clearly influenced Keynes and White). Keynes's and White's attempts to articulate state-contingent rules were innovative.

[6] Keynes sketched the essence of this scheme in 1933, in the series of newspaper articles that he published as *The Means to Prosperity.* There he wryly noted the oddity of the coiner of "barbarous relic" becoming an advocate of "a qualified return to the gold standard" and defended his shift by stressing the opt-out qualifications. See Keynes, *Collected Writings IX*, p. 362.

[7] For an antecedent and possible influence on White's views, see Young (1929), pp. 370-71. Young, however, was advocating central bank cooperation on intervention policy, not explicitly on exchange rate adjustment. Currie later expressed views similar to White's; see Currie (1936).

[8] Currie also regarded capital controls as necessary "to reduce the magnitude of capital movements and to prevent the adjustment of trade to such movements" (Currie, 1936, quoted in Sandilands, 1990, p. 55). Currie's view thus was closer to Keynes than to White.

[9] In 1938, for example, White prepared Secretary Morgenthau's response to suggestions for a "Buy American" scheme. That proposal, he argued, would be "quite inadvisable because US policy should be to promote, not discourage, international trade. A Buy American program fosters the development of the kind of unintelligent and extreme nationalism which is doing so much to threaten world peace" ("General Hines' suggestion...," 1938). The memorandum also opposed stamping US-made goods as "Made in America," on the grounds that the practice might discourage imports

[10] Before the creation of the Grand Alliance against the Axis in 1942, White regarded both Germany and the Soviet Union as equally dangerous totalitarian states. See "The Future of Gold," Section IV, pp. 15-16; and the untitled document beginning "Should Germany succeed...," 1940.

[11] Keynes's 1941 trip to Washington is described in Harrod (1951), pp. 505-14, Moggridge (1992), pp. 655-62, and Skidelsky (2000), pp. 107-31. None of these accounts includes any record of the substance of Keynes's discussions with White.

[12] Following the 1935 and 1941 meetings mentioned above, Keynes and White met several times to negotiate a compromise agreement for the post-war financial institutions: in London in October 1942, in Washington in September-October 1943, and in various US locations (Atlantic City, New Jersey; Bretton Woods, New Hampshire; and Washington) from June to October, 1944. They met again in Washington from September to December 1945, where they engaged in brutally lengthy negotiations on post-war financial assistance to Britain. Their final encounter was at the inaugural meeting of governors of the IMF and the World Bank in Savannah, Georgia, in March 1946.

[13] Keynes's personal views on trade and currency liberalization were, broadly speaking, more liberal than the official British position, but he clearly regarded full liberalization as a long-term goal. See Moggridge (1991), pp. 805-9, for an account of Keynes's efforts to persuade the British Treasury to let him take a more realistic position in his negotiations with the US Treasury on post-war financial assistance.

[14] The quotation is a paraphrase based on the Morgenthau diaries, in Blum (1967), p. 316. Charles Kindleberger, in his autobiography, recalls participating in wartime discussions in which "White was determined to make the British turn their pockets inside out" (Kindleberger, 1991, p. 66).

[15] On the British negotiating strategy and tactics and Keynes's role therein, see Pressnell (1986). I am grateful to Don Moggridge for drawing this point to my attention.

[16] Privately, he derisively imagined these "confused counsels" as like a "most monstrous monkey house." Letter to Sir David Walley (30 May 1944), in Keynes, Collected Writings XXVI, p. 42.

[17] White began advocating substantial financial assistance for the Soviet Union in March 1939. With Neville Chamberlain's government still wavering in its responses to Hitler's acts of aggression, White wrote to Morgenthau that it was time to "clear the decks for future economic collaboration between the two most powerful countries in the world, which, irrespective of their political differences, constitute, for the present at least, the core of resistance against the aggressor nations" (untitled memorandum, "In our opinion...," 1939, p. 2). Apart from the subsequent period of the Nazi-Soviet pact, treatment of the Soviet Union as an indispensable strategic partner was a mainstay of US policy throughout the war.

[18] Once the Grand Alliance collapsed and the Cold War ensued, White's advocacy of and participation in bilateral cooperation with the Soviet Union was misinterpreted by some as a betrayal of US interests; see Boughton (2001a) and Boughton and Sandilands (2002). Similarly, Skidelsky's assertion that "White's Stabilisation Fund was just one fragment of a much larger design at whose centre lay American-Soviet condominium, not Anglo-American co-operation" (Skidelsky, 2000, p. 243) is without textual foundation. Cooperation was White's stated goal in both cases.

[19] The aggregate of initial IMF quotas was reduced to $7.5 billion because some countries–notably the Soviet Union–decided not to join. Keynes's proposed magnitude (75 percent of pre-war trade) is in 6(5) of his 1943 plan; see Horsefield (1969), p. 23. White's "at least $5 billion" is from his 1942 plan; Horsefield, op cit., p. 44.

[20] The paper was put in final form by the Fund staff after White's death and was circulated to the Board more as a tribute than as an active proposal. For White's original draft, see "Rough draft...," 1948.

[21] The SDR system was designed to avoid this problem by requiring participating countries to "reconstitute" their holdings within a specified time limit. Political pressures, however, led to the gradual relaxation and ultimate abrogation of this requirement (Boughton, 2001b, p. 933).

[22] See1942 Keynes plan, 12; Horsefield (1969), p. 27. The implied reference was to the real-bills doctrine, which at the time was the prevailing basis for central bank rediscounting and thus for national monetary control.

[23] "Symmetric" is used here only relative to the Keynes Plan. The White Plan and the final IMF agreement imposed stronger disciplinary measures on deficit than on surplus countries, but White did not intend to create a system in which creditor countries could accumulate surpluses without cost. His 1942 plan specifically aimed

at engendering conditions under which the United States would gradually reduce its holdings of gold.

[24] See Harrod (1951), pp. 543-48, and Skidelsky (2000), pp. 251-52.

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Discussion

James Boughton's

WHY WHITE, NOT KEYNES? INVENTING THE POST-WAR INTERNATIONAL MONETARY SYSTEM

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We should be very grateful to James Boughten for this paper. By using new sources, it throws some new light on the 1930s origins of Harry White's ideas that went into his wartime Stabilization Fund proposals.

However, it is the business of commentators to be critical and I think in this case there are some grounds for criticism. The first is that regarding Keynes he is too dependent on one source for his vision, Robert Skidelsky's third volume of his Keynes biography, *Fighting For Britain* (2000). This leads him to conflate and confuse Keynes's position with the British position. If, for example, he had read Leslie Pressnell's official history *External Economic Policy Since the War: The Post-War Financial Settlement* (1986), or the relevant bits of the diaries of James Meade and Lionel Robbins dealing with Anglo American negotiations (Howson and Moggridge 1990a 1990b), he might have come away with a different impression. The second is that regarding Keynes he does not pay attention to changes in position, something that he need not have done if he had used the relevant volumes of the *Collected Writings of John Maynard Keynes* (XXIII-XXVII)[1] more thoroughly.[2] Finally, I think in a couple of cases he pushes his case for White, as White often did himself, too far.

As for the first point, I would emphasize one thing, which should be obvious: Keynes's own position was often different in many respects from the position of British officials or of the British Government, just as White's positions were not necessarily the same as those of other American officials or of the United States' Government. That this is the case was best illustrated during the 1945 Anglo-American Loan negotiations where Keynes found

himself in effect negotiating with *both* the Americans and his superiors in London, but one can see it in other cases. Such differences make conflation dangerous.

As for the second general point, let me take some examples:

(1) Let me look at the issue of discrimination and preferences.[3] Keynes's involvement in discussion of these issues began in Washington in the summer of 1941, when he successfully torpedoed attempts to renegotiate the Anglo-American Trade Agreement of 1938 by refusing to abjure the post-war use of discriminatory trade practices and concluded in Washington in the fall of 1945 where preferences still existed but it was clear that margins of preference would diminish with post-war trade liberalization. However, in all cases, Keynes was prepared to sacrifice preferences in exchange for appropriate concessions. However he would not unilaterally abandon them: as he put it in 1945 "You can't make a horse-trade if the other side knows your horse will fall dead in three months" (Pressnell 1986, 278).

But there is more to the point: it is clearly documented in the Keynes Papers and the public archives that Keynes became more liberal on commercial policy as he became convinced that Britain's post-war balance of payments positions was secure. The 1941 American visit had left him deeply pessimistic as to the ability of the United States to play anything other than a *de*-stablilizing role in the international economy. Hence this comment in the first draft of the Clearing Union (JMK, XXIV, 24):

> The United States never succeeded in effecting the reorientation of her domestic economy required by the changing circumstances in which she found herself after the last war. Her necessary task after this war will be still more severe. The solution involves a serious disturbance to the vested interests both of industry and of agriculture of a kind which would be contrary to the political traditions and national customs of the country to carry through. Her first contribution to this field [a draft International Wheat Agreement] is not encouraging.

Nonetheless, even in that first draft he noted (ibid., 32):

> I should accept the view that (capital movements apart) the more or less continuous maintenance of a high level of employment in USA. would go a long way in redressing the international balance of payments. But this is a happy outcome on which we cannot yet rely.

I think it can be argued that as Keynes became convinced that the United States would reduce the disruption to the international economy resulting from its changed economic circumstances, either through full employment policies, or a scarce currency clause, or a set of appropriate post-war transitional arrangements, Keynes became more willing to take the risks involved in trade liberalization. One can see the development of this line of

thought through the correspondence with Jacob Viner in 1943 (JMK, XXV, 325) to his final optimistic paper 'The Balance of Payments of the United States' with its careful analysis of how he thought the US was moving towards international equilibrium and reminded his colleagues that "the classical teaching embodied some permanent truths of great significance" and that the *Proposals for Consideration by an International Conference on Trade and Employment* were "expressly directed towards creating a system which allows the classical medicine to do its work" (*JMK*, XXVII, 444-5).[4]

(2) As regards the sterling area, it is clear from the record that Keynes was prepared to offer liberalization of the use of current earnings long before the Loan negotiations began (Pressnell 1986, 225-6, 228-9, 237-53 and Appendix 19). Moreover, his suggested treatment of sterling balances was not as self-interested as Boughton suggests: the proposals for outright cancellation, long-term blocking and current account convertibility were, once the notion of burdening the small Fund with them rightly disappeared,[5] radical by British standards. Moreover, there was no alternative White proposal on the table.[6]

(3) As regards the two-power approach to the organization of the Clearing Union, Boughton seems to have forgotten that this disappeared between the November 1942 and the April 1943 drafts of the Clearing Union. He also seems on occasion to confuse the bi-lateral nature of the negotiations which Keynes initially envisaged as setting up the Clearing Union with the ultimate purposes of the Institution which were as multilateral as any of White's.

(4) As regards Keynes and price stability, it is not clear from the evidence that "Keynes's primary preoccupation throughout the 1930s and 1940s was the avoidance of deflationary pressures" (p. 22). This was not the bias of *How to Pay for the War*, for example. Nor was it *necessarily* the aim of the Clearing Union. Indeed, Keynes favored price stability as a policy goal. However, as he told both Hayek and Benjamin Graham, but he did not believe that this objective should be imposed from outside by an international currency regime (*JMK*, XXVI, 39-40; see also pp. 31-2).

> I doubt the political wisdom of appearing, more than is inevitable in any orderly system, to impose an external pressure on national standards and therefore on wage levels. Of course, I do not want to see money wages forever soaring upwards to a level to which real wages cannot follow. It is one of the chief tasks ahead of our statesmanship to prevent this. But we must solve it in our own domestic way, feeling that we are free men, free to be wise or foolish. The suggestion of external pressure will make the difficult psychological and political problem of making good sense prevail still more difficult.

As for the detailed arrangements for the Clearing Union, these varied from draft to draft.[7] However, it is clear as one moves between drafts, as the

pressure on creditor countries to adjust diminished, the size of the Union rose (*JMK*, XXV, 35, 118, 453).[8] However, he later suggested that the resulting quotas were "a bit on the high side" and he was prepared to drop them to two-thirds of a three-year moving average (*JMK*, XXV, 246). Moreover, from the November 1942 draft onwards there was provision for a general reduction of quotas by agreement if the supply of international currency proved excessive – and Keynes noted

> I should not be at all surprised if, in fact, the actual danger which meets us turns out to be just the opposite, namely an excess of international currency. (*JMK*, XXV, 324-5)

But it is not clear that the Union was seen as a lender of last resort in the normal sense. Moreover, one should remember when comparing the size of the Clearing Union with that of the Stabilization Fund or with the IMF in various guises, one is not comparing like with like in that the Clearing Union from the fourth draft onwards deliberately did not allow for the expansion of reserve currency arrangements (JMK, XXV, 125).

(5) Finally, there is one element in Keynes's thinking that I think should be emphasized in comparing the two schemes. From the very beginning, Keynes regarded his scheme as 'Utopian in the sense, not that it is impracticable, but that it assumes a higher degree of understanding, of the spirit of bold innovation, and of international cooperation and trust than is safe or reasonable to assume' (JMK, XXV, 33). Thus he expected compromise. He did not expect the proposal to become reality. As he put it to Sir Frederick Phillips:[9]

> Personally I have been quite conscious that we were in a sense propagating for the Harry White plan by pressing the Clearing Union in the way we have, but that there was no harm in that. Indeed, quite the contrary. After all the Harry White Plan is not a firm offer. The real risk is that there will be no plan at all and that Congress will run away from their own proposal. No harm, therefore, at least so it seems to me, if the Americans work up a certain amount of patriotic fervour for their own version. Much can be done in detail hereafter to improve it. The great thing at this stage is that they should get thoroughly committed to there being *some* plan...

Thus far, with the exception of his 'contraption' for sterling balances, I have steered clear of White. However, there are a few points where I think that the paper, perhaps in pursuit of brevity, is somewhat misleading. The discussion of the 'Anglo-American Financial Agreement' reads oddly, given that the paper was presented *after* the agreement was signed and was part of the American campaign to get the Loan through Congress. Similarly, the reporting of the 1945 *Foreign Affairs* piece ignored the fact that it was again

part of a Treasury campaign, this time in favor of the Fund, one of whose themes was that, as Richard Gardiner puts it after quoting the same passage that Boughton quotes, (1956, 140)

> Congress was encouraged to believe that after passage of the Fund and Bank no additional appropriations would be needed to solve the world's major reconstruction problems.

Again, attention to context might suggest the use of a different source to support an argument.

However, as I said at the outset, we should be grateful to James Boughton for his illumination of the background to Harry White's wartime proposals.

ENDNOTES

[1] Moggridge, 1979-80, hereafter referred to as JMK followed by the volume number and the page number.

[2] There he would have found at least seven rather than the two versions in Horsefield (1969) that he actually discusses.

[3] I should note in passing that the system of Imperial Preference had not been and was not intended to be a "free-trade zone that excluded the United States" (p. 17), but preference within a tariff system.

[4] In a paper for the Political Economy Club in Cambridge in February 1946, he went even further (Moggridge 1992, 824):

> Assuming that the policy of deliberate economic isolationism should be rejected, have we nevertheless agreed to return to a version of laissez-faire which is bound to break down?
>
> I consider this a grossly ignorant misunderstanding of what has happened.
>
> The classical doctrine is supplemented by exchange variations and overall import control. This seems to me the modern version of economical liberalism. My H. of L. speech. To this charge I would plead guilty. I can easily see that it is not acceptable to totalitarians in our midst, but it seems to me soundly consonant with our national attitudes, instincts, principles of self-interest. A totalitarian economy must be a large one. The British Empire for obvious reasons is not a suitable unit for totalitarian experiments.
>
> Here is a genuine attempt at agreed rules and principles of action. My complaint would be that they do not go far enough in the liberal direction ... But they go a long way.

[5] Moreover, that smaller Fund would be restricted to providing balance-of-payments assistance only for current account imbalances and would be excluded from providing assistance to meet the problems of transition from war to peace.

[6] There was "a rather fascinating contraption" for dealing with sterling balances that White revealed to Keynes in discussion, but this never reached the negotiating

table as White was unable to persuade Secretary Vinson and his colleagues to present it. That proposal looked very much like Keynes's except that the funded part of sterling balances would be bought from their holders by the United States at their discounted present value and Britain would then repay that discounted value over a period without interest (JMK, XXIV, 532-5).

[7] However, no draft stipulated that "central banks would pay subscriptions in gold" (p. 23).

[8] However, I cannot find evidence that the "usable portion ... would be less than half the total" (p. 24).

[9] See his similar comment to Roy Harrold (JMK, XXV, 268).

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Chapter 5

STRUGGLING WITH THE IMPOSSIBLE: STERLING, THE BALANCE OF PAYMENTS AND BRITISH ECONOMIC POLICY, 1949–72

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1. INTRODUCTION

Our purpose in this paper is to explore how endemic sterling crises and balance of payments weaknesses contributed to that developing debate about how to halt national economic decline, a key constituent of which was a process of exploration as to how to lessen the external constraint to high growth and employment. This necessarily entails a close study of Britain's balance of payments situation (one often misunderstood) and a review of current thinking about the key exchange rate policy episodes (a euphemism for crises) of the golden age (principally, devaluation in 1949, the radical ROBOT plan of 1951–2 to float sterling, the 1967 devaluation and the eventual decision to float in 1972). Our survey encompasses official thinking and that of the wider market for economic ideas. Given the binding nature of the external constraint, and that Britain was one of the world's largest and most open economies during this period, economists (both insiders and outsiders), officials and politicians should have been particularly receptive to new thinking in international and open economy macroeconomic theory and policy. This paper discusses why in practice such new ideas were largely tangential to the British policy debate and in the process reveals something about both Britain's political economy and the more general relationship between developments in economics and their diffusion into policy.

In §2 we introduce sterling and the balance of payments, exploring the multiple problems confronting the authorities and the extent to which there

have been misconceptions about what those problems were and how these impacted upon the policy space. This prepares us for §3 where we examine in chronological order the most important exchange rate episodes from devaluation in 1949 through to the eventual decision to float sterling in 1972, with attention here devoted to the developing policy debate about how to break free from the external constraint. Some preliminary conclusions are then drawn in §4.

2. STERLING AND THE BALANCE OF PAYMENTS

2.1 The 'great unmentionable'

Between 1964 and 1967 the Wilson government struggled desperately to manage the unmanageable and to avoid the unavoidable, namely to deliver on its manifesto commitment to engineer a higher growth path for the British economy whilst maintaining the sterling exchange rate parity of $2.80.[1] Although Wilson, and his chancellor, Callaghan, tried hard to make the topic of devaluation the 'great unmentionable' within Whitehall, they obviously could not control the broader debate outside of government. Even so, something of a self-denying ordinance of sorts was attained within the City and the media.[2] Indeed, the press displayed a patriotism which is unimaginable today, so much so that for much of the period 'open advocacy of devaluation was ... the next worse thing to publishing obscene literature' (cited in Browning 1986, p. 5).[3] Much macroeconomic and financial discourse was thus tacit, although quiescence and deference should not be overstated because, on closer examination, whilst the financial press and indeed academic economic journals did not often mention the unmentionable, there were a steady number of books published on sterling and its predicament which did[4]. However, with the permissible discourse being defined as it was, much of the arguments had to be presented as radical and polemical rather than as routine and inescapable.

2.2 Three weaknesses interact

We take as typical Hirsch's *The pound sterling: a polemic* (1965).[5] In reality, less a polemic and more a measured analysis of Britain's predicament, Hirsch identified (p. 24) three potential sources of pressure upon sterling, noting that 'Sterling's fundamental trouble is that since the war

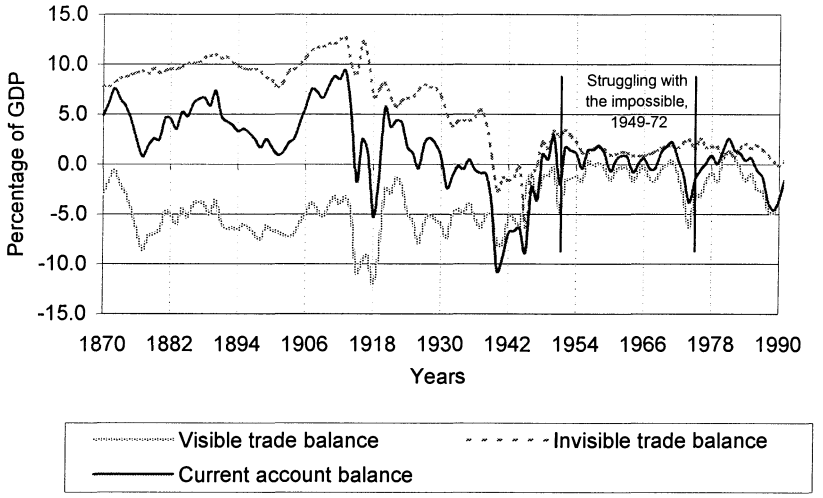
it has been vulnerable at all three points simultaneously' to the extent that when operating in unison they produced a statis in British economic policy:

- a purely trading deficit;
- a net capital outflow; and
- a run on what he termed the 'sterling bank', namely the weak foreign exchange reserves position.

What mattered was the interaction of these three weaknesses; hence: 'The continued deficit or threatened deficit on trade and investment together has itself exposed the inadequacy of the reserves, making sterling less safe as a banking currency.' Examining each of these weaknesses in turn, we begin with a longer-term perspective on Britain's current account balance of payments, for too often contemporary discussions did not appreciate two historically distinctive characteristics of Britain's golden age situation.

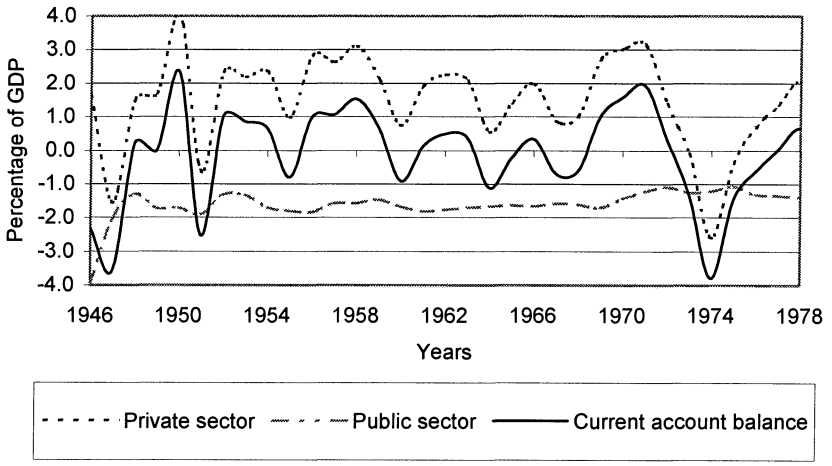
2.3 The current account balance of payments

We chart in Figure 1 the current account balance since 1870, from which the first of these characteristics is immediately evident: Britain's historic deficit on visible trade was much *smaller* than before the Second World War, and it was thus the diminished surplus on invisibles which underlay the overall deterioration in the current account. In any case, the narrowness of the amplitude of cyclical fluctuations in the current account balance, and the fact that this summary measure in an economy as open as that of Britain's is the difference between two very large numbers, themselves subject to wide (but variable) margins of error, suggests not that the current account was in chronic deficit but that it was in approximate balance. Admittedly, on average the current balance was stronger in the 1950s than in the 1960s;[6] yet, contemporary policy discourse, and particularly the 'Stop-Go' debate, was preoccupied with the 'trade gap' and thus operated with an overly simplistic notion of whether Britain paid its way, itself a discourse which more often than not was unhelpful in understanding the cause of Britain's economic difficulties and the stock of remedies available.



Surces: 1870-1947: Feinstein (1972, tables3,15); 1948-:Middleton (2000, fig. 2.2).

Figure 1: Current account balance of payments as % of GDP at market prices, 1870 – 1997



Source: CSO (1991, 142-3).

Figure 2: Current account balance of payments by sector as % GDP, 1946 - 79

This leads to the second characteristic which again must qualify our notion of chronic balance of payments weakness during the golden age. As Figure 2

shows, from the end of the Korean War through to the Barber boom (1971-3), it was the substantial deficit on government's international transactions account which was responsible for the overall current account balance dipping into deficit in times connected to, but not necessarily coincident with, the 'Stop-Go' cycle. Again, this fact was well known in the policy community, as was its cause in Britain's unwillingness to adjust its geo-political aspirations and obligations to match its diminished economic capacity which had been fatally compromised by relative economic decline and two ruinous world wars (which also transformed the UK's balance of external assets and liabilities with consequent feedbacks from the capital to the current account balance of payments). There was accordingly no deficit on the private sector current account balance of payments until OPEC I.[7]

It is easy, indeed too easy, in retrospect to dismiss much of the contemporary preoccupation with the balance of payments as ill-founded. It is, however, important why the 'trade gap' became something of a fetish, and equally why sterling's value became a national virility symbol (it is important also that the very public struggle to defend the 1964–7 parity heightened its symbolic importance, upon which see Blaazer 1999). We have, therefore, to understand the symbolism and in particular to ground these issues within the developing preoccupation with economic decline. As Manser (1971, pp. 178-9) argued in an important and influential assessment which made the necessary connections:

> The balance of payments is the English sickness. This is not because the British have a balance of payments that is any different from any other. It is because only the British make it a point of national conscience.
>
> The UK's self-revulsion over the balance of payments is only part of a larger, and more long-lived process. For many years, since the 1939 war, and probably the war before that, Britain has felt herself to be on a gentle slide... . Confusedly, they saw in all the signs of greater power around them, evidence of failing ability and shrinking strength in themselves. Nothing, of course, could be farther from the truth. Objectively seen, Britain's problem was that, through no fault of her own, the world had grown into dimensions beyond her own; she remained no less effective by her own standards ... But Britain persisted in the belief that she was in absolute decline...
>
> Into this atmosphere erupted, for reasons of subtly similar causation, the postwar balance of payments problem. This, as though pre-ordained, became the magnet for all these disconsolate feelings. The trade balance was a first-class gauge of the country's recovery. If we attained a surplus,

we were on the mend. If we persisted in deficit, and our share of world trade went on declining, we were still heading for decay.

Economists, of course, rightly prefer to ground their analyses in terms of market fundamentals, with sentiment as intangible and thus intractable. However, British electoral history demonstrates the shock value of the balance of payment,[8] and indeed it is clear if we follow the adversary politics–rather than the postwar consensus–interpretation of pre-1979 British politics that sterling and the balance of payments had become highly politicised. As a component of demand management they had thus become a routine part of the cut and thrust of party political competition in which, from the late 1950s onwards, competing claims for competence in economic management were dominating that contest (Middleton 2000, pp. 70–2). In the resulting discourse sterling's value and the state of the balance of payments become part cause and part consequence of that ongoing inquest into national economic decline; and, like demand management, they had a much higher profile in Britain than in most other ACCs (see Hansen 1969, p. 417), this of course a consequence of the way in which Keynesianism was incorporated into postwar British economic policy.

2.4 The capital account balance of payments

Progressing now to the second of the interacting weaknesses, that of a net capital outflow, we have a further connection to the decline debate – one, however, not always made – and an element of continuity with earlier periods when the authorities sought sufficient of a current account surplus to fund a significant net outward long-term capital flow. The background here is Britain's long-established status as a major outward investor and the City of London's financial institutions that underpinned this, compounded by the postwar period having seen the rapid growth of multinational enterprise (MNE) activity between ACCs as part of the process of shifting international specialization and the renaissance of globalization after the autarky of the interwar years. Quantitatively, when net outward foreign direct investment (FDI) is related to GDP, the pressure on the capital account was actually far less after the Second World War than earlier in the century.[9] This is hardly surprising given the reduction in the available current account surplus and that, far from the City expanding and thriving at the expense of the rest of the economy (another component part of the Pollard thesis), as the British economy declined relatively so did the City of London (Michie 1992, pp. 25-8). Even so, such was the scale of outward FDI in relation to the available current account surplus that offsetting private short-term borrowing could become significant which, in turn, increased the vulnerability of sterling to speculative pressures.

The balance for official financing was defined as the basic balance (that is the balance on current account plus long-term capital movements) plus private short-term capital movements. It was during this period the summary measured monitored closely because before 1970 private short-term capital movements were regarded as accommodating or financing the surplus/deficit of the current account, and it thus gave rise to an equilibrium measure of the financial pressure on the authorities from the point of view of maintaining the external value of the currency (Thirlwall and Gibson 1992, p. 9).

MNE activity, of course, is only part of determinants of trends in Britain's capital account balance of payments, but it is an important part of that story and it needs to be linked more strongly to the various narratives about economic decline and in particular to those examining weak competitiveness in manufacturing. Our purpose here is not to identify the capital account for particular attention, nor indeed MNE activities, but to use them to reiterate the interrelatedness of the balance of payments and national economic decline stories in the context of the British economy being a leader in the globalization of production.[10]

2.5 Sterling as a reserve currency and the foreign exchange reserves

We come then to the third and final interactive weakness: the foreign exchange reserves. The question of the adequacy of international reserves, both for the system as a whole and for individual economies, was a lively topic of the 1950s but particularly the 1960s (Stern 1973, pp. 390–3), not least in Britain. Whilst the various international roles of sterling were being eclipsed by the dollar over one third of international trade was still being settled in sterling in the early 1960s (Cooper 1968, p. 180 n. 71), such that the total global volume of sterling denominated transactions was of a magnitude that it could easily swamp available British reserves (Cohen 1971, pp. 72-3).

Whilst the precise criteria and level of reserve adequacy for the UK must remain in doubt, all were agreed that in practice actual levels were inadequate to enable government to meet its macroeconomic objectives. Estimates vary but Heller's (1966, table 1) results are suggestive: on his definition of optimal reserve levels, Britain had the lowest actual levels of all of the western European countries, and this without factoring in the margin required for key-currency status, let alone–as some maintained ought to be the case – some measure of provision for the outstanding liabilities of the Sterling Area. Moreover, if we focus specifically on the period in which the balance of payments was becoming established in policy-makers minds as the primary impediment to faster growth, we can see how complex and limited was the

potential for replenishing the reserves and thus widening the policy space. Conan (1966, pp. 91–2) estimates that between 1958–63 the current account had a surplus of nearly £2bn with the overseas sterling area and a deficit of nearly £1.5bn with the non-sterling area, but that whilst the surplus contributed nothing to the reserves the deficit involved an equivalent drain. On capital account, UK exported £1bn of long-term capital to non-sterling countries but imported £1.4bn, resulting in an overall deficit of £400m. In sum, therefore, it was the deficit on capital account, not the surplus on current account, which was the effective agent in replenishing the reserves.

Many commentators by the early 1960s (Hirsch included) had no trouble in concluding that the burden of sterling's reserve function had to be transferred to an international institution, such as the IMF (cf. Cohen's 1971 important cost-benefit analysis of sterling's international role which produced a less clear-cut case for full 'domestication' of the pound). James (1996, p. 186), in his official IMF history of the Bretton Woods system, is emphatic that 'The instability caused by the sterling balance overhang and the danger of liquidation ... lay behind each of the major British crises of the second half of the 1960s.' Hirsch's (1965, pp. 48-9) detailed assessment of the anatomy of the eight sterling crises between 1947–65 confirmed that it was factors relating to sterling's international role and speculation that predominated. Many of the sceptical school (for example, Matthews 1969a, p. 128) saw the three most important crises of our period (1957, 1961 and 1966) as not due to the state of the current account balance of payments, which was improving, but as essentially crises of confidence in sterling in which the remedies lay beyond macroeconomic policy.

2.6 The political economy of the balance of payments

For Hirsch, as for others who understood the British policy community, the trading performance problems of the balance of payments were unnecessarily compounded by the unwillingness of successive governments to confront the Bank of England's agenda for reconstructing the international pre-eminence of the City of London and the role that this would entail for sterling: an accelerated timetable for full convertibility (Green 1992, pp. 200–1, 204). As is now clear, nationalization of the Bank in 1946 was 'a great non-event', a technical change of ownership which did not lead to a fundamental overhaul of British monetary policy (Middleton 1996, pp. 547–8).[11] Monetary policy continued to be conducted on the basis of traditional and informal arrangements, with the Treasury's efforts during the 1950s to develop monetary policy as a complement to fiscal policy being hindered by the Bank who were deeply resistant to monetary instruments becoming part

of demand management and thus subordinate to government macroeconomic policy strategy (Ringe et al., 2002, ch. 5).

Once returned to power in 1951 the Conservatives pursued a rhetoric of 'sterling strong and free' which resulted in accelerated liberalization of trade *and* finance, with the driving force behind this being the Bank. As we now know from Fforde (1992) on the Bank, and from Robert Hall's diaries (Cairncross 1989; 1991),[12] Cairncross (1987), Ringe and Rollings (2000b) and others beginning to research the Treasury papers in the PRO, Treasury officials, and particularly the professional economists in the Economic Section of the Treasury, were frequently in conflict with the Bank over monetary policy, and especially over the Bank's reluctance to restrict bank credit to make monetary policy more effective. We know that one result of this was that the government established the Radcliffe committee, from which emerged a report (HMSO 1959) which is typically taken as the triumph of Keynesian views as to the superiority of fiscal over monetary instruments in demand management, and which also led the Bank to be more transparent about its activities (Cairncross 1999), not least in inaugurating the Bank of England *Quarterly Bulletin* in 1960 and the Central Statistical Office's (CSO) *Financial Statistics* in 1962. However, less well known is how frequently these clashes were generated by strong differences of opinion as to the appropriateness of the government's fiscal stance, in particular its public expenditure plans, usually portrayed as a 'burden' by the Bank, and most particularly the investment programs of the nationalized industries. The resistance of the Bank to change, however, should not be overstated: for example, by 1964, in response to development of the Eurocurrency markets and the momentum that was building for both British membership of the EEC and for the reform of the international reserve system, a senior Bank figure admitted privately 'I do not think that at the highest levels in the Bank there would be dissent from the proposition that to get rid of reserve-currency status while maintaining our trading currency position would be a most desirable achievement' (J.S. Fforde, cited in Schenk 2001).

We have as yet not had the opportunity to explore the balance of payments dimension of this Bank-Treasury conflict, although of course the way it came to a head in the early days of the Wilson government in October 1964 is now well-known.[13] We do know, however, that 'throughout the 1950s the Treasury worked assiduously with the Bank ... to foster the development of London's international role' and that, from the late nineteenth century onwards, 'the basic tenet of the Treasury's position has been that the City's earnings have been either a mark of underlying prosperity or the means to achieve prosperity' (Green 1992, p. 212). Given that, compared with the interwar period, it was the invisibles account that had changed greatly for the worst, there was a certain rationality to this position. We must guard, however, against assuming that the Treasury can be treated as one institution

with one voice on these matters: as Peden (2000) has shown there were frequent conflicts between the overseas finance (OF) division and those officials responsible for more domestic policy issues, whilst as Opie (1968) and Brittan (1971) argued at the time there existed an 'overseas lobby' within Whitehall which in its effectiveness and influence challenged one of the precepts of national economic policy. Thus, as Brittan (1971, p. 471) put it:

> One does not need to have any truck with the more chauvinistic forms of patriotism to be mildly disturbed by the number of departments which approached economic problems primarily from the point of view of international negotiation, and how few are professionally concerned to put forward the interests of this country, 'let alone of something as materialistic and crude as the standard of living.'

Next we come to the matter of balance of payments statistics and the interests and institutions that underlay their production and interpretation. We have already noted that these were subject to frequent, on-going revision. The inadequacies of these data, indeed the whole infrastructure of national account and other economic data, was considered in quite some detail by the Radcliffe report (HMSO 1959, ch. X). It was by then very noteworthy that there was a growing discrepancy between official estimates of the deficit on the basic balance measure and the net changes in reserves, overseas sterling holdings and other items that comprised the balance of monetary movements, the residual being the 'balancing item'. This was always positive, indicating the under-recording of credit items, but it became very strongly positive in 1960 and 1961 (Bank of England 1962, p. 16; 1964). Moreover, as McMahon (1964, p. 20), at this time writing for the Royal Institute of International Affairs rather than the National Institute, observed:

> ...what is the point of all of this? Lumping movements of volatile short-term claims and liabilities in with current receipts and payments and long-term capital movements will simply blur an important distinction ... Surely an 'overall' deficit of £200 million together with a private monetary inflow of £300 million would represent a greatly inferior position to that of an 'overall' surplus of £100 million and no net private monetary movements? Yet they would both imply a 'market' surplus of £100 million.

He went on to quote from an earlier National Institute (Major 1962, p. 58) comment on the British data: 'Thus, the balance of payments can be regarded as anything from indifferent to potentially disastrous according to the view taken of the balancing item.' Concurrently, IMF officials were both developing procedures for standardizing balance of payments concepts and data and becoming concerned about the British situation (de Vries 1987, chs 2–4), and whilst we need to guard against making too much of balance of

payments statistics in their own right it is legitimate to ask – as did many contemporaries – whether some of the speculative pressures endured might have been lessened if the British authorities had moved more quickly to both modernize the presentation of the accounts and to improve on the under-recording of credit items. After all, with the growth of the Eurocurrency markets, the private sector was becoming increasingly involved in the financing of balance of payments and this necessarily increased the premium on quality data.[14]

There is an obvious parallel here with the delay in reforming the budget accounts to accommodate the reality of Keynesian demand management and the developing national accounts framework, where there was much friction between the Treasury – anxious about its traditional public expenditure control functions – and the economists-statisticians of the CSO (Ringe et al. 2002, ch. 6). The role of Bank officials in these debates and, more generally, official Whitehall thinking on the development of balance of payments statistics, needs to be investigated now that the papers are available. The costs, for suppliers and collectors of such data, will obviously need to be taken into account, and there are suggestions that these issues were particularly relevant to the on-going problem of under-recording exports (Balacs 1972, p. 44). Given that the incoming Labour government was ill-prepared for the balance of payments and sterling crisis it faced in October-November 1964, an adjunct to that investigation must be whether attention was devoted to improving the presentation skills of the key actors and the reception of economic and financial data by the markets.

The balance of payments situation and the roles of sterling raise bigger questions about power and governance in two important senses. These were first, at the center of government, where efforts at modernization devised in response to the growing perception of decline challenged existing relationships within Whitehall and between Whitehall and key interests groups. Treasury-Bank conflicts have already been noted in this respect, but beyond this it should be observed that the 'external constraint' was variously deployed to promote or to retard some of the more radical proposals for modernization. Thus it is part of folklore amongst economic radicals that the 1965 National Plan was 'stillborn, possibly murdered' by the refusal to devalue (for example, Opie 1972, pp. 170–1). Conflict between the Department of Economic Affairs (DAE) and the Treasury was endemic, and in some minds to be encouraged in pursuit of a 'creative tension' in British economic policy which would at last bring the supply side to the foreground (Clifford 1997; Clifford and McMillan 1997). The struggle being played out between the Treasury and the DAE was thus, to its critics in the City, one between financial and structural remedies which translated into more or less market friendly or inherently dirigistic solutions, the latter, of course connected with – in a delicious phrase from a leading financial journalist of

the time – the 'Hungarian goulash' (Davis 1968, ch. 5) of Balogh and Kaldor. Even earlier, the Suez humiliation had brought forth a fundamental defence review (the Sandys white paper of 1957) which sent shock waves throughout Whitehall and which began a process of global disengagement which was to accelerate in the 1960s, one eventually bringing relief of sorts to the balance of payments. Although Suez was an accelerant rather than a cause of this disengagement, sterling weakness was used strategically by Macmillan, now prime minister but previously chancellor, and others to promote their broader ambitions.[15]

We have secondly a national sovereignty dimension to this, one we introduced earlier with Manser's (1971) diagnosis of the balance of payments as an English sickness, and which we now need to develop. It is axiomatic that postwar British political economy was conducted in terms of a number of polarities and that whatever the rhetoric the reality of government policy typically required extensive resort to smoke and mirrors. At the domestic economic policy level, the cross-party rhetoric was that full employment was the pre-eminent policy objective whereas, contra Keynes and the spirit of the Keynesian revolution, it was the pursuit of external balance which always prevailed until the ill-fated Barber boom of 1971–3 (Middleton 1989), the one time when the initial current account balance of payments surplus was deemed sufficiently durable to merit a 'dash for growth' (we discount the Maudling dash of 1962–4 because the initial starting point was much weaker and the onus was placed on 'Keynesian plus' to deliver salvation).

In terms of external economic policy, there was a coincident and related myth of continued national macroeconomic autonomy which was underpinned by an interpretation of Britain's joint role with the US in the framing and development of the Bretton Woods system and in the ongoing Anglo-American 'special relationship'. Wilson's railing against the gnomes of Zurich hid a bitter truth, one admittedly always more difficult for a Labour government: the ability of international markets to discipline even democratic governments. The reality, of course, was that 'sterling [w]as the dollar's first line of defense' (Eichengreen 1996a, p. 125; also James 1996, p. 186), this severely limiting the UK's room for manoeuvre and thus the policy space. Britain's international economic diplomacy was similarly constrained, but here it was a combination of *de facto* US client status and burgeoning post-colonial guilt which operated to condition what was thought to be possible (Reynolds 2000, ch. 8). Set against the background of growing globalization of trade and capital by the 1960s, increased competition in western Europe as those economies not only recovered fully from the war but appeared to overtake Britain, it is not difficult to see how the assumption of economic superiority that had guided policy-makers for so long became increasingly unsustainable and that consequently the search for remedies for economic decline became ever more desperate.

3. EXCHANGE RATE POLICY

3.1 Assessing exchange rate choices

Our starting point for assessing British exchange rate policy is with Joan Robinson's observation (1937, p. 154), made shortly after the *General Theory's* appearance, that there is no unique, policy-free equilibrium exchange rate which accords with balance of payments equilibrium. The notion of such an equilibrium rate is accordingly a chimera, and since the *General Theory* we have come to understand and to make exchange rate choices within a framework that there are an infinite number of equilibrium rates which correspond to various mixes of demand and supply conditions and monetary, fiscal, trade and other policies. Much of that framework, of course, was developed into the open economy macro model by the subjects of this conference.[16] Interpreting the historian of thought's brief here to provide data and background for the economists to consider the transition path between developments in theory and policy in practice, we here focus on what our current understanding is of British policy from devaluation in 1949 through to the decision to float sterling in June 1972.

Before embarking upon that assessment we need to comment, in relation to the British situation, on the three stylised facts that preface Kenen's (1985, pp. 628-36) literature review of how the closed economy macroeconomic model of Keynes's *General Theory* was opened. We can confirm the first two stylised facts: those concerning the preference for government over the market in exchange rate management, and of the dominance of the Keynesian model (and of the operational assumption that government could deliver macroeconomic stability) in the evolving system of national economic management. Indeed, so far as Britain is concerned, the balance struck in favor of government rather than the market and the dirigiste policies that resulted produced, in terms of the models of capitalism literature, a distinctly mid-Atlantic hybrid: one neither resembling American nor continental European practice (Middleton 1996). We take issue, however, with his third stylised fact, that of the insularity of national economies, which in turn was derived from three characteristics:

> (1) The share of foreign trade in gross national product was relatively small and, more important, substantial trade barriers restricted the role of commodity arbitrage. In consequence, exchange rates could be changed without significant effects on domestic prices. Domestic prices were determined by domestic wages, and wages were determined by conditions

in domestic labor markets. The Phillips curve was firmly anchored even before it was discovered.

(2) The international capital market did not function freely. Therefore, private capital movements could not automatically finance deficits and surpluses on current account. By implication, those deficits and surpluses could not raise or reduce asset stocks or wealth by enough to induce large changes in aggregate demand. (The private flows that did occur could also continue for long periods, because they were small in relation to the corresponding stocks.)

(3) The national monetary systems were insulated. On the one hand, official intervention in foreign-exchange markets were sterilized; they did not affect the monetary base. On the other hand, short-term rates could be controlled by monetary policy; they were not influenced by foreign rates or exchange-rate expectations. [Kenen 1985, p. 636]

Kenen uses Grassman's (1980) data on the long-term openness of economies, taking as his measure exports plus imports as a share of GNP. This data shows that Britain largely regained its traditional openness in trade quickly after the war, with openness then relatively stable from the mid-1950s through to the mid-1970s whereas other ACCs (including the US, a far less open economy) had a delayed catch-up and then an accelerated trend to greater openness, which of course for the original EEC member states was influenced by the trade creation effects of that customs union. On international capital markets, we agree that they did not function freely but would contend that Britain was again a special case and that consequently international capital market activity was particularly relevant to the financing of the British balance of payments. Finally, the British monetary system was by no means insulated; indeed, that it was not is central to the 'Stop-Go' phenomenon and thus to the policy-makers dilemmas. Part of our thesis is thus that the British economy and sterling its national currency were in the vanguard of renewed globalization. To an important extent this determined its exchange rate choices, or more often non-choices.

3.2 Devaluation, 1949

The September 1949 devaluation (from \$4.03 to \$2.80 to the pound) was at the time, as it remains today, the subject of much debate.[17] Generally represented fatalistically, as largely inevitable given the convertibility crisis of 1947, and as mainly driven by the requirements of Anglo-American relations, this episode encapsulates most if not all of the dilemmas present for policy-makers in conducting national economic management and exchange

rate policy in particular. The similarities and continuity with later episodes should not, however, be overdone: this was still a time of intensive postwar reconstruction, the background was one of a fully (indeed over-fully) employed economy operating within an extensive system of physical controls and, notwithstanding the undeniable policy achievements since the end of the war, there was a pervading anxiety about whether a postwar slump, domestically and internationally, could ultimately be avoided.

The dominant questions were: was a change in the parity necessary; and, if so, by how much; and what accompanying adjustments to demand- and supply-side policies ought there to be? Some key figures in the British economics establishment (for example, Hawtrey, Henderson and Harrod) opposed the devaluation at the time and subsequently; indeed, Hawtrey maintained to the end that Britain's postwar economic problem was not an overvalued but an undervalued currency which resulted in domestic excess demand. They were certainly not lone voices, either amongst the economists outside government, nor inside, nor indeed some of the politicians involved, in fearing that in circumstances of a supply-constrained economy a devaluation would simply result in an adverse turn in the terms of trade without producing a significant correction to the current account balance of payments.

One of the most penetrating assessments of this risk was actually provided before the devaluation, by Meade (1948) in his LSE inaugural lecture. Meade's position is particularly important, not just because he was at that time developing what would become *The theory of international economic policy* (1951; 1955a),[18] but because he would become a forceful and influential exponent of a managed float for sterling (Meade 1955b).[19] Meade's pioneering work on reconciling internal and external balance was already most attentive to the pass-through effects of a devaluation if higher import prices fed through to higher money wages (a problem that Friedman 1953b, another early exponent of floating, also conceded), But in the development of the open economy macro model it must be remembered that the manner in which Meade defined external balance at this time excluded the capital account, and thus although his developing work on policy assignment (monetary and fiscal instruments to attain internal balance, the exchange rate for external balance) was relevant to both British policy and theory it was not until Mundell (1962; 1963) recasts internal and external equilibrium by redefining the balance of payments to include the capital account that we have a fuller and more effective role for monetary policy in the assignment of instruments and objectives.

We see then that from an early point there was concern about incipient inflation in relation to exchange rate policy. In fact, for British policy-makers these anxieties had interwar antecedents, while of course after September 1931 the exchange rate regime was one of a managed float.[20] Moreover, in

contrast to the interwar period, we have full employment since the Second World War, and we know that right from outset of planning for postwar employment policy there was a recognition (best represented in Kalecki's classic 1943 paper) that the eradication of unemployment would alter the political economy of the labour market with consequent risks for inflation. The call for sterling to be floated was, however, muted and underdeveloped in 1949, as was professional economists' opposition to devaluation. Policy-makers at this time operated with a conception of Britain's limited room for manoeuvre born of their deep commitment to international economic cooperation; they had little time for longer-term, strategic thinking which might redefine what a purely British national interest might be. In any case, British balance of payments and/or sterling crises provide a low signal to noise ratio, one which concentrated the minds of policy-makers on the here and the now to the exclusion of almost everything else. Finally, of course, Nurske's post-mortem on interwar currency instability and the risks of speculation if currency markets were freed (League of Nations 1944, pp. 137–8) remained the orthodoxy amongst international opinion (see Bordo, this conference).

What then can we discern in this first episode? First, 1949 is unusual because the official US position was one of encouraging the UK to adjust the parity, whereas British officials used the prospect of devaluation as a bargaining counter in Anglo-American negotiations on trade, finance etc. Moreover, when devaluation did eventually occur it 'may also have helped to reduce US criticism of the "restrictivist" aspect of British policy as it showed a willingness to let the price mechanism be used to try and correct the payments position' (Tomlinson 1997, p. 36). But there is also a continuity here, with a polarity that resonates for the ensuing British policy debate of whether shifting relative prices through the price mechanism or something more fundamental is required to attain external balance. Thus, for Labour the lesson learnt from 1949 was that for political reasons it must never again be branded the 'party of devaluation', whilst such was the intractability of Britain's economic problems that it was planning not the price mechanism that needed to be invoked. Accordingly, when Labour confronted the issue of devaluation once more, on taking office in 1964, it was distrust of the price mechanism that was critical in Wilson's thinking, and in his account of this later episode the lessons of 1949 reverberate strongly (Wilson 1971; see also Stewart 1977, pp. 27–8).

Secondly, devaluation was inextricably linked to issues of confidence, a means thereby of fusing politics and economics. It provided a veil behind which opponents – insiders as much as outsiders – of government policy could unite to strengthen their positions; thus, the devaluation issue was 'spun' by its opponents as a loss of confidence in the parity being equivalent to a loss of confidence in the whole conduct of economic policy. Cobbold,

the Governor of the Bank (1949–64), made no secret of his view that public expenditure should be cut and the nationalization program halted if further US assistance was to be attained, whilst senior Treasury civil servants wrote memoranda on the 'burden' of government expenditure: all further evidence of the qualified nature of the Keynesian revolution in economic policy in early postwar Britain. In this case the bogy of confidence and the rhetoric of excessive government were not decisive in the subsequent decision, but the die was cast and once exchange controls loosened they were to be much more decisive forces.

Thirdly, the compelling factor in this episode – as later – was the parlous state of the reserves, but 'the corollary was not drawn that ways must be found of reinforcing reserves either at once or at least in time to withstand further pressure of the same kind' (Cairncross and Eichengreen 1983, p. 139). This in turn resulted from the multiplicity of justifications that the pro- and anti-devaluation camps expounded, together with confusion about what accompanying measures there need be to make devaluation (or non-devaluation) effective: how was competitiveness to be improved and/or resources redeployed. And, in turn, amidst the bombardment of claim, counter-claim and confusion the domination of short-term considerations was enhanced when it is arguable that longer-term thinking needed to be decisive. Examination of the Treasury and other papers in the PRO shows that officials and ministers in practice had little opportunity to carefully consider the pros and cons of the matter. It was the loss of reserves that settled the matter, and no amount of entreaties by the Chancellor about the commitment to the parity were effective once the speculative momentum was established because market operators were only too well aware of the uniquely difficult circumstances faced by the British authorities.

Finally, a number of other characteristics are evident:

1. Devaluation was delayed beyond the period of maximum advantage. Although obviously hindsight matters here, it is the case that in 1949, as later, there was a presumption against surprising the markets;
2. The measures to accompany the devaluation were considered separately and after the event: policy was not as 'joined-up' as it might have been;
3. In 1949 at least, the decisive actors in the decision were not the Chancellor, nor the prime minister, nor even other senior ministers with economic briefs. Rather, the running was made, and the impetus provided, by three young and relatively junior figures, all incidentally economists (Gaitskell, Jay and Wilson).
4. The background to the crisis was one of an overall current account balance of payments surplus: the crisis arose after one of the most sustained improvements from a payments deficit ever seen (from a deficit of 8.8 per

cent in GDP in 1945 to a surplus of 0.9 and 0.5 per cent in 1948 and 1949 respectively);[21] and

5. Amidst the confusion of debate we should highlight the role of rhetoric: the invocation of national prestige, the reliance upon moral arguments concerning obligation as lines of defence for the status quo.

3.3 Operation ROBOT, 1951–2 and its aftermath

This episode has acquired something of a reputation as a missed opportunity to alter radically the whole trajectory of postwar economic policy by floating sterling (and thus attaining nominal convertibility) and acting decisively on the sterling balance overhang – in effect, taking the strain off the reserves and putting it on the exchange rate.[22] Originating as a joint Bank-Treasury proposal made shortly after the Conservative's regained power in October 1951, amidst a developing Korean War induced sterling and balance of payments crisis, 'Operation ROBOT'[23] has been invested with much counterfactual authority: had it been adopted, it is said, the postwar settlement of the balance between government and market would have shifted decisively towards the latter and, with the external constraint lessened, 'Stop-Go' might never have occurred and thus there would have been less scope for its supposed growth-inhibiting effects. Big claims have thus been made in certain quarters for ROBOT, not least from Dell (1996, p. 194) that 'Never again would a British government contemplate the possibility of imposing its policy on its external economic environment. In 1952, for the last time, the thought was there that it might be attempted.' After Suez, which revealed the reality of dependence on America and the chimera of Britain's great power posturing, the room for independence in exchange rate policy was greatly reduced.

With the official papers now available, at least for the Treasury (if less so the Bank), the ROBOT episode has now been extensively investigated. Historical revisionism being what it is, it will come as no surprise that the most recent works have downgraded the radicalism of ROBOT, at least in its implications for the domestic economy. ROBOT is now understood as more the product of contingent circumstances than of some generalized reaction against the (domestic and international) postwar settlement. Opinions have hardened too about whether it was ever a viable proposition, although it should be noted that none of the three principal advocates ever published their mature reflections on this episode whilst many of those who had opposed the scheme have been active in promoting their version of events and their significance.

What then can we conclude for our purposes? First, that the attractions of a floating rate, hitherto largely confined to the professional economists in or

associated with the Economic Section, had now been recognised by some in the core economic policy-making community (including very importantly the Bank). Secondly, although matters had not progressed to the point that the incoming government had campaigned for a floating rate (far from it), the rhetoric of 'sterling strong and free' could be interpreted in this light, and this seems to be how Butler saw it and was thus attracted to ROBOT. In his memoirs Butler (1971, pp. 158–9) made much of this episode:

> In the long-term ... I believe that the decision not to free the pound was a fundamental mistake. The absence of a floating exchange rate robbed successive Chancellors of an external regulator for the balance of payments corresponding to the internal regulator provided by Bank rate. If such a regulator had existed, and a floating rate had been accepted, Conservatives would have been saved some of the uncertainties and indignities of 'stop-go' economics and Socialists the traumatic experience of a second formal devaluation.

Cairncross and Watts (1989, p. 303 n. 1) warn against Butler's mature reflections, indicating (but without citing a source) that Butler admitted to Bridges, Permanent Secretary, Treasury (1946–56), that he was wrong in supporting ROBOT at the time.[24] We should note also that by the time his memoirs were published Bretton Woods was in its deaththroe and sterling was on the brink of finally being floated. Howard's (1987, pp. 184–9) life of Butler adds little to our detailed knowledge of events, but he is convincing that whilst Butler was not bounced into supporting ROBOT his status as one of the most circumscribed Chancellors in recent history made him susceptible to its surface appeal as he sought to define his chancellorship. It is, of course, critical that the impending sterling crisis of which ROBOT's proponents warned did not actually transpire (the Bank had taken far too pessimistic a position on the vulnerability of sterling), whilst the 'freedom' and the widening of the policy space for which the Conservatives hankered was potentially available through the reactivation of monetary policy: Bank rate having been unchanged since 1939 it was symbolically moved up from 2 to 2½ per cent shortly after assuming office and then onward to 4 per cent in the March 1952 budget. The end of the Korean War, and the ensuing peace dividend, then widened the fiscal policy space yet further, at least in the short- to medium-term.

The manner of ROBOT's defeat, and the passions that it had aroused, ensured that the issue of a floating rate was kicked into touch for at least a decade as a potential political option.[25] It continued to surface as something worthy occasionally of economic debate within the Treasury[26] and in the Bank,[27] but typically amongst the economists the positions taken were not straightforward because what ROBOT had done was to conflate the issues of a fixed vs. flexible exchange rate with that of when convertibility might be

attained and how it would be defined. Thus some policy insiders who one would expect to favour a floating rate, such as Hall and Plowden,[28] who were broadly 'expansionists', did not because of the implications of early convertibility for sterling and the balance of payments. Moreover, fad and fashion came into play. As Brittan (1964, pp. 173–4) put it in the first edition of his insider-inspired account of the Treasury in the 1950s and 1960s:

> In the early 1950s the idea that we could dispose of our balance of payments problem by leaving sterling to its own devices was advocated by economists and politicians who were regarded as Right Wing. Indeed, every Conservative Chancellor before Mr Selwyn Lloyd [1960–2] seriously considered letting the pound float up and down to find its own level in the world currency markets. If no one took the plunge it was through lack of nerve rather than doctrinal inhibitions. It was among 'progressive' and 'Left of centre' economists that exchange rate changes were violently opposed as a false solution that did not get to the root of the difficulties.
>
> Today the pendulum has swung right back. Any thought of touching sterling is denounced in leading articles and political and City columns as irresponsibly extreme – too extreme for the official leaders of the Labour Party; and economists who believe in floating rates (mostly moderate Lib-Labs in their politics) are treated almost as bomb-carrying Bolsheviks.

Full *de jure* convertibility of sterling was not permitted until December 1958, although in practice February 1955 is the more important watershed, that when *de facto* sterling was made convertible into dollars and other foreign currency for all non-residents at or very near the $2.80 parity. The path to convertibility and the pace of the journey were constantly pressed by the Bank and the OF division of the Treasury; they were resisted by what Brittan (1971, p. 198) calls the 'anti-laissez-faire wing' of the Treasury. This fault line,[29] in effect that between those privileging the interests of the financial and those of the real economy, was to endure, albeit much reconfigured as the 1950s progressed and the case for institutional restructuring of the Treasury and of fundamental economic policy reform gathered pace. With floating kicked into touch, and with the overseas finance lobby in the ascendant, the domestic finance (anti-laissez-faire) wing of the Treasury would eventually begin to move towards more fundamental solutions for slow growth and balance of payments weaknesses.

Economic growth was, of course, emerging by the late 1950s as a policy objective in its own right, not just as a means of attaining ultimate economic objectives (Tomlinson 1996). This marked not just an addition to existing policy objectives, nor a simple shift in emphasis between them. Rather, the

mid-late 1950s were the beginnings of a preoccupation with national economic and political decline which is still being played out today; and in particular it was part and parcel of Britain's relations with Europe: 'the story of fifty years in which Britain struggled to reconcile the past she could not forget with the future she could not avoid.' This delicious phrasing from Young's (1998, p. 1) brilliant analysis of Britain in Europe could so easily be applied to the preoccupation with sterling and most other aspects of economic management in relation to the ongoing inquest into national economic decline.

What matters here is that with floating off the agenda, and declinism emerging as a dominant motif in domestic political competition and thus a central preoccupation of policy-makers, there was an opportunity to confront traditional assumptions, institutional structures and deep-seated problem areas of the postwar settlement of the (Keynesian-Beveridge) managed-mixed economy welfare state. What ensued was, by British standards, an extraordinary period of institutional and policy experimentation and innovation: a 'great reappraisal' (Brittan 1964, ch. 7), 'a "revolt against orthodoxy"' (Ringe and Rollings 2000a, p. 336; see also Pemberton 2000; 2001b). There resulted new institutions of policy advice and policy-making: the National Economic Development Council (NEDC) and its supporting National Economic Development Office (both 1962), and, eventually, the Department of Economic Affairs (1964). This period, which we might date from the October 1959 general election through to the first year or so of the Labour government first elected in October 1964, also saw the instruments of demand management augmented with the 'regulators,' for fine-tuning purposes, and an incomes policy, not just in the hope of effecting a leftwards shift in the Phillips curve but to promote the corporatism that underpinned NEDC and planning; it resulted in a whole raft of supply-side initiatives, principally relating to indicative planning but also important reforms to taxation and industrial training (so-called 'Keynesian plus' policies); and marked a profound shift in geo-political direction with the decision to seek membership of the EEC, the first of these applications (1959) necessarily leading policy-makers to rethink the sterling problem in terms of Europe as much as America and the second (1967), much influenced by the sterling crisis of summer 1966 (Young 2000, pp. 88–9), concentrating minds on the parity.

In 1959 the Radcliffe report then confirmed that floating was neither a viable nor a necessary course of action, justifying this in terms of interwar 'experience ... [being] sufficient to demonstrate both the inconvenience of a fluctuating pound and the impossibility of altering its value without regard to the interests of other countries which use sterling as an international currency' (HMSO 1959, para. 710). It did, however, give some attention to when a devaluation might be permissible to maintain competitiveness and

thus current balance of payments equilibrium, but emphasized 'everything possible should be done to bring the rise in domestic costs and prices under control' (HMSO 1959, paras 715–16). With floating thus completely off the agenda, high hopes were thus entertained for the great reappraisal, as were great fears by the 'forces of conservatism' whose commitment to the Keynesian economic management aspects of the postwar settlement were always circumscribed by the prior claims of a more traditional political economy.

For what we might call the economic radicals, both inside and outside of government, this was an exciting time, this excitement long predating the prospect of a Labour government which attracted so many within the British economics profession (and would eventually disillusion so many).[30] The modernization of government had been an explicit objective since Macmillan left the Treasury to become prime minister in 1957, and certainly the Plowden report on the control of public expenditure (HMSO 1961) had much more far-reaching effects on the Treasury's structure, organization and personnel that just public expenditure control (Lowe 1997), although the longer-term planning of expenditure programmes was itself very important and very pertinent to concerns about 'Stop-Go'. The arrival of new personnel, replacements at the top, but above all the new structure established in 1962 of a unified 'Finance and Economic division' (comprising three groups: Finance, Public Sector and National Economy) promoted much improved policy coordination with important implications for policy-making with respect to growth-promotion and the balance of payments. Until the records are mined we will not know what became of the 1950s fault line between OF and domestic finance, but there will almost certainly be a different sort of story to be told here.[31]

3.4 The great unmentionable: defending $2.80

The fate of 'Keynesian plus' is typically told in terms of the excesses of the Maudling boom and the refusal of the incoming Labour government, for largely political and personal reasons, to devalue and thereby widen the policy space.[32] This orthodoxy owes much to the dominant voices and accounts of disillusioned former Labour ministers and those economic advisers who, entering Whitehall as irregulars, quickly progressed from enthusiasm for Labour's growth strategy (which explicitly committed the new government to an end to 'Stop-Go') to disillusion and despair.[33] This orthodoxy culminates with, and has especial meaning because of Labour's defeat in the June 1970 general election, a result which was ascribed by many to the government's inability to deliver the necessary economic 'feelgood

factor' because the delay in devaluing sterling provided insufficient time to synchronize the economic and electoral cycles to its advantage.

The story of sterling in the 1960s is thus told largely in terms of adjusting (or not adjusting) the parity and the implications (or opportunity costs) of this for macroeconomic policy and, thus ultimately, economic modernization. The history of floating rate proposals, as against moving on the adjustable peg, has not yet been told.[34] Thus the UK reception of Friedman (1953b) and that of his student's work, Sohmen (1961a), has not yet been researched. Both received *EJ* reviews (respectively Hutchison 1954; Lamfalussy 1962) which were fair but hardly supportive, while Sohmen (1961b) drew attention to his path-breaking work in a widely noted attack on the elasticity pessimism that he detected in Bhagwati and Johnson's (1960) important *EJ* review of international trade theory. The independent – but non-monetarist – British strand for flexible rates was, of course, represented by Meade, who reiterated his support for flexible rates in a series of *Three Banks Review* papers in the context of the growing problem of adequacy of international liquidity (Meade 1961; 1964; 1966). But beyond Meade, there was a considerable body of British economists active in the policy debate who favored alternatives ranging from a free float through to a crawling peg. Thus Kaldor – who would become a Labour special adviser (1964–8) – favoured floating from early 1963 onwards (McMahon 1964, p. 51), while the crawling peg, the invention of Harrod (1933, pp. 166–77), was revived by Scott (1959) and then taken up by Meade (1966) and Williamson (1966), all of whom sought to strengthen the underlying balance of payments 'so as to release the British economy from "stop-go"' (Williamson 1981, p. 65). Such proposals were, of course, part of a broader western dialogue – within and outside of the IMF – about ways in which greater flexibility could be introduced into the Bretton Woods par value exchange rate mechanism (de Vries 1987, p. 84), but at the risk of being parochial we maintain the UK focus of our account where for too long the myth has been perpetrated that there was a pro-devaluation consensus amongst academic economists which was opposed only by obstinate politicians (Thirlwall and Gibson 1992, p. 236).

This as yet largely untold story has a counterpart in the sceptical spirit in which the very real economic reasons for not devaluing in 1964 are treated within the historical literature: thus too often the sceptics were derided in Labour circles as City lackeys, and thus part of the problem of the dominance of the 'establishment' in British official life (a critique pushed with unusual vigour and venom by one of the Hungarians, Balogh, who interestingly actually opposed devaluation in 1964).[35] Four strands to these economic arguments deserve re-examination and more detailed research.

First, we have the 'elasticity pessimists,' the contemporary term for those unconvinced by the price competitiveness arguments for devaluation. Harrod's pessimism was, of course, long-standing, but in 1965–6 others

would join this camp, and from very different political standpoints (Lionel Robbins through R.J. Ball and John Hicks to Joan Robinson). Looking at 1964 specifically, but subsequent years in general, there was strong evidence that the balance of payments deficit had little to do with the price uncompetitiveness of British goods (the view pressed in Thirlwall 1970; 1988), and at least one highly respected retrospective economic assessment has argued that 'The difficulties of 1964 were cyclical and were on the capital account; they were not the result of forces to be rectified by exchange rate depreciation'; that the deflationary measures of 1965–6 were effective in bringing the current balance back into surplus by 1966.II, although the size of long-term capital flows ensured that the balance for official financing (and thus the basic balance) was always sizeable; and that much of the pressures that eventually forced the devaluation in 1967 were speculative (reinforced by arbitrage) and external (initially, a slow-down in the growth of world trade and then the effects of the Middle East crisis) rather than relating to a sustained deterioration in the trading balance.[36]

Secondly, there was the Paish view: that if aggregate demand is not extended beyond productive potential, there is no need for a floating rate (or devaluation); if, however, excess demand is permitted then the floating rate becomes unworkable and merely results in permanent cost inflation, i.e., the exchange rate does not permanently free policy-makers but merely accommodates inflation and all with an uncertain future. This connects to the third developing concern: that of the pass-through effects of a devaluation on wages and thus prices. After two decades of moderately fluctuating inflation rates and broadly stable inflationary expectations, two decades in which full employment pertained with no slump to discipline wage bargaining, there was much anxiety by the mid-1960s that there was an incipient 'new inflation' in which newly militant trade unions were operating with an enhanced inflation consciousness (Jones 1987, p. 81). These sorts of arguments also acquire considerable retrospective force when related to recent general work by economists and political scientists on the labour market institutions and attitudes that were conducive to golden age growth in the ACCs (Eichengreen and Iversen 2000), and more particularly Eichengreen's (1996b) exploration of how in Britain high union density, a fragmented and uncoordinated industrial relations system and a flawed postwar settlement prevented a cooperative capital-labour bargain emerging which could generate wage moderation and high investment. Certainly, there was a view – particularly associated with the National Institute – that a devaluation would jeopardise the success of the price and income policies, a strand of the 'Keynesian plus' strategy for which some held high hopes as a way of maintaining the competitiveness of British goods (Tew 1978b, p. 313).

Fourthly, and with shades of 1925 and the decision to return to the gold standard at the prewar parity of $4.86 (upon which see Moggridge 1972), we have the issue of the discipline provided by a challengingly high exchange rate. Some saw distinct advantages in $2.80:

> To those economists, inside as well as outside the government, whose views on the British economy came to be broadly in line with Paish's, the $2.80 peg, at any rate up to mid-1966, was never an undesirable constraint on demand management, since from the end of the war up to that time demand had almost never been inadequate – and had intermittently been excessive. In the high-demand phase the constraint had been beneficial, in that it served to reinforce the government's resolve to deflate demand to a level which this school of thought regarded as more appropriate to the domestic objectives of demand management. [Tew 1978b, p. 313]

The 'great unmentionable,' as with the prewar parity in 1925, provided financial discipline, a strait-jacket, at a time when politicians and advisers recognized the risks that the new government could succumb to the ambitions of spending ministers and the natural desire of trade union leaders to maintain free collective bargaining. Expectations of what Labour could deliver in 1964 were very, very high, indeed, impossibly inflated; had there been a devaluation or a free float of sterling the risks for the exchange rate, public borrowing and a wage-price spiral were immense. Possibly the worst could have been avoided, although what later transpired during the 1970–4 Heath administration does not make for optimism. In retrospect, the really interesting question about Labour's exchange rate policy was not the 1964 decision but that of 1966, when George Brown raised the unmentionable once more and the economic fundamentals were more clearly commensurate with exchange rate realignment.[37] But this really is with the benefit of 20:20 hindsight, that essential instrument of the economists' toolbox.[38]

Having rejected devaluation in October 1964 the Wilson government had no other option but to deflate, thereby initiating a new phase of the 'Stop-Go' cycle which, in opposition, it had been committed to terminating. Its hesitation in adopting that deflationary stance, together with the more dirigiste measures such as the emergency import surcharges, lessened its credibility with the foreign exchange markets already anxious about Labour's intentions. The new Chancellor's mini-budget speech the following month compounded the government's credibility deficit with the markets, and from then on until, and indeed beyond, the eventual forced decision to devalue in November 1967 the situation was only sustained by tight capital controls, standby credits with the IMF and lines of credit from the G10. This was to be the pattern of crisis after crisis at the international level, the counterpart to

frequent mini-budgets and even firmer 'Stops' at the domestic level. That a fundamental adjustment to the parity was avoided as long as it was owed as much to international relations as to market fundamentals. As James (1996, p. 186) describes it:

> For the next three years, Britain continued to avoid devaluation because of the willingness of the United States to support sterling: partly because of a feeling of solidarity between reserve currencies and partly because of the United Kingdom's importance to the US conception of its foreign policy. At the highest level of government to government dealings, foreign policy, troop stationing, and reserve currencies all entered into a complex calculation of national interest. An appreciation of the similarity between the international roles of the dollar and sterling led to the argument that the British currency represented the outer perimeter defense of the dollar. The escalation of war in Viet Nam after 1965 made the United States more desperate for European allies and eager to work the 'special relationship'. After April 1966, when France withdrew from the military organization of the North Atlantic Treaty Organization (NATO), the American search for European support became more pressing.

What James does not detail, but is now becoming clear from the PRO papers, is the extent to which in pursuing this course the British monetary authorities were in effect allowing America to dictate not just external but internal economic policy. Ironically, shortly before devaluation did occur, Callaghan enraged his backbenchers when he told the Commons that he was now in sympathy with the Paish critique (James 1996, pp. 188–9); ironic also, and pace 1976 and another Labour government, that when the IMF made the extension of credits conditional on even stricter deflationary measures, Wilson and Callaghan refused to comply and instead the unmentionable became the inescapable: sterling was devalued from $2.80 to $2.40 on 18 November 1967 (Eichengreen 1996a, p. 128).

3.5 Devaluation, 1967 and its aftermath

The 1967 devaluation was accompanied by fervent efforts to make it 'effective,' these comprising packages of expenditure-switching and expenditure-reducing measures, increasing in intensity in a series of budgets and mini-budgets through to 1969, to create the available resources to supply more exports and import substitutes until productivity could be raised. The further tightening of fiscal and monetary policy formed the bedrock of these packages. Upon devaluation, Bank rate was set at the unprecedented level of 8 percent and was a very visible signal that a government, which came to

power committed to an alternative to 'Stop-Go', had exhausted itself struggling with the impossible and in the process fatally compromised its longer-term growth-promotion strategies.

'Stop-Go' was thereby reinforced and the policies that Labour had derided in opposition, of resolving the balance of payments problem by depressing domestic production, investment and employment, and thereby undermining long-term growth potential, were once more in the ascendant. For 'Stop-Go' critics the devaluation solved little or nothing. As Pollard (1984, p. 34) put it:

> To be sure, the clinging to a particular dollar exchange rate was irrational, as irrational as a great deal else in British economic policy. But it is equally certain that devaluation, when it came, was merely a means of registering the fact that Britain's productivity had fallen far behind that of others while money incomes had risen at about the same rate. Moreover, once it was completed, devaluation would make no fundamental change whatever, since nothing would have been done to arrest the process of relative decline which had made it necessary in the first place.

Moreover, matters were about to deteriorate yet further. Pollard (1984, pp. 45–6) continued:

> These measures availed the government little, for it lost the election, but the Conservatives inherited an economy which had been, in current parlance, 'strengthened': i.e. by producing less, cutting back on investment and on technical improvement schemes (making British industry much less competitive in real terms), something like a temporary balance in the foreign payments account had been achieved. Output had virtually stagnated during 1968–70, investment had risen very little from its low level of 1964–7, and price inflation had slightly subdued... . The pound was then undervalued in world price terms. But the potential for an enormous wage explosion had been accumulated in the pipeline, following years of restriction and restraint, and wage costs were beginning to push up prices even in the last months of Labour rule in a manner which has become all too familiar in the years since. Under the Heath government of 1970–4, in fact, continuing inflation, particularly of wages, was gradually taking over from the foreign balance of payments and the external value of the pound as the main preoccupation of economic policy makers, and the main pretext for restrictive policies.

In this view the next phase of 'Stop-Go' was thus established, with 'Stops' triggered not by sterling or the balance of payments but by inflation fears, although of course after June 1972 sterling was floated and temporarily at least the current account, being in surplus, was out of the spotlight. Some comments on this further strand of the 'Stop-Go thesis are necessary at this stage. First, more recent national accounts data portrays a somewhat rosier

picture for these years: real GDP grew by 2.2 per cent on average per annum between 1968–70, admittedly somewhat below trend (approximately 3 per cent) but hardly virtual stagnation. Even manufacturing output grew by 2.1 per cent on average per annum over these years, while real Gross Domestic Fixed Capital Formation was 16.2 per cent higher on average 1968–70 than 1964–7.[39]

Secondly, at the time what preoccupied policy-makers, indeed caused great puzzlement, was why the current account took so long to turn around, and this necessarily – on the elasticity's approach to balance of payments adjustment – elicited concerns that the devaluation had not been big enough. The lag, indeed initial deterioration in the trade balance, would, of course, later be understood in terms of a J-curve effect, a purely empirical phenomenon (Masera 1974; Artus 1975; Tew 1978b, pp. 354–6).[40] Later, others would offer more fundamental critiques of how a balance of payments deficit could remain impervious to exchange rate changes (for example, Kaldor 1977 and Ball et al. 1977).

Thirdly, if sterling was initially undervalued after the devaluation, it is significant that even those who considered the undervaluation to be inflationary did not on the whole oppose a devaluation. Thus Laidler (1978, p. 56) estimates that with the parity adjustment sterling moved from about 5 per cent overvaluation to 10 per cent undervaluation,[41] but along with others involved in the 1977 National Institute sponsored retrospective simulation exercise, in which competing macroeconomic forecasting groups revisited 1964–9 and were given the opportunity to attempt what-if simulations of different policies, he devalued.[42] Fourthly, it must be borne in mind that an earlier devaluation of lesser amount might very well have been effective, for whilst waiting and the struggle to defend the parity may have been good domestic and Anglo-American politics it meant that when the adjustment was eventually forced, it had to be of sufficient size as to be credible with the markets. And even then through 1968 and early 1969 the drain on the reserves continued and there were doubts whether the new parity could be maintained: 'Confidence in the pound was indeed slow in returning' (Cairncross and Eichengreen 1983, pp. 193–4).

At the end of 1968 official liabilities to the IMF and other monetary authorities totalled some $8.1bn (about 7.8 per cent of British GDP), over $3bn higher than a year earlier, while sterling and foreign currency reserves were $270m lower (Tew 1978b, table 7.2). Thereafter, after a further tight budget which must finally have done something to demonstrate the government's commitment to the parity, and thereby enhanced its market credibility, the current account balance of payments situation turned sharply for the better. From a current deficit of 0.5 per cent of GDP in 1967 and 0.3 per cent in 1968, a surplus of 1.2, 1.8 and 2.2 per cent was reported for the three years 1969–71 respectively. The reserves were replenished and by April

1972 the government, by now a Conservative administration, was liberated of all official short- and medium-term debt (Cairncross and Eichengreen 1983, p. 194). At last the government was within sight of its objective, declared in its submission to the Radcliffe committee, of securing a current account surplus sufficient to fund long-term overseas investment and build up sufficient reserves to both finance faster growth and provide some buffer against the pressures to which sterling as an international currency was inevitably subjected.[43]

Given the 'formidable array' of policies brought to bear to improve the balance of payments there is no difficulty in explaining why it eventually came right for the authorities, reaching a record current account surplus in 1971 (Tew 1978b). Indeed, as Thirlwall and Gibson (1992, p. 243) noted:[44]

> So severe were the deflationary measures ... and so rapid the growth of export volume (largely as a result of the rapid expansion of world trade), that the trade balance itself also moved into surplus in 1971, the surplus ... being the largest in recorded history [there having only been two surpluses since the 1820s in any case, both – interestingly – in the 1950s]. The 'full' employment trade balance would no doubt have been in deficit, but the current account would still have shown a surplus.

On this view then, the spotlight should be less on the exchange rate and more on a Labour government breaching the spirit if not the letter of the commitment to full employment. Admittedly, the addition to unemployment and the total national figure to which it rose were small compared with what later transpired. Obviously, this was no easy matter for a Labour government at mid-term. Moreover, it has added significance because the Conservative government that unexpectedly took power in 1970 inherited an economy with a margin of unused resources that even it found unacceptable and then resistant to its early efforts to reflate. It was thus the Heath administration that would be panicked into a U-turn, thereby largely abandoning its burgeoning neo-liberal – in some eyes, proto-Thatcherite – policies, when the rise in unemployment threatened to take the headline total above 1m. The fall out from the measures to make the November 1967 devaluation effective was thus of long-duration and immensely important to both political parties: they form an important foundation to so many strands of the developing crisis of Keynesian conventional wisdom.

3.6 The decision to float the pound, 1972

For many British economists 'devaluation seem[ed] to have rectified the fundamental balance-of-payments disequilibrium' (Matthews 1971, p. 15). However, it is the orthodoxy amongst the economists that the balance of

payments surplus so painfully acquired after 1967 was then squandered by the Barber boom:

> A policy of 'steady as she goes' would probably have consolidated the surplus and allowed the country to retain some of the benefits of devaluation for longer. As it was the surplus was frittered away by an irresponsible expansion of internal demand, reminiscent of what happened in 1964 and which led to the troubles and stagnation of the 1960s. [Thirlwall and Gibson 1992, p. 243]

Concurrently, of course, as the beleaguered Bretton Woods system headed towards terminal crisis and disintegration there developed a growing body of international opinion that floating was in principle preferable to the adjustable peg system. It is important, however, to note here that floating always commanded more support amongst the academics than the politicians. Clearly, the December 1971 Smithsonian Agreement between the G-10 was a landmark in that process,[45] and again at the risk of being parochial we here look at these developments through largely British eyes, noting in passing that 'Between 1971 and 1974 the international monetary system moved towards floating, not so much because this was an agreed solution, but because it emerged out of a failure to produce an agreed solution' (James 1996, p. 234). (We should also note here that, in contrast to the earlier episodes discussed, we have far less of a historical record to base our account as the official papers for the late 1960s and early 1970s have not yet been released by the PRO. The following is also not concerned with the largely technical matters but concentrates on the broad political economy of the debate.)[46]

The international background, of scepticism about the realignments effected in December 1971, coupled with widely diverging inflation rates between countries, produced magnified international capital movements which inevitably heightened sterling's vulnerability. The deaththroe of Bretton Woods thus created an entirely new situation for British policy-makers already struggling to reconcile their neo-liberal policy agenda with the underperforming domestic economy that they considered they had inherited from Labour. They certainly shared the concerns of the international policy community that if the system degenerated into uncoordinated floating rates then the whole tenor of international trade liberalization and globalization of finance could be imperilled by a return to protectionism and competitive devaluations, but perhaps for the first time since Operation ROBOT a 'Britain alone policy' could be entertained.

Within the British policy debate the floating rate option acquired a new salience, but this actually predated the exciting events of 1971–2. There was a number of strands here which we introduce as a initial step in researching this topic. First, of course, the lag between the 1967 devaluation and the

turnaround in the reserves and the current account kept many thinking that more radical alternatives might be necessary to free the British economy from the external constraint. Secondly, amongst the academics, the Bürgenstock papers (Halm 1970) received much attention, including an extended *EJ* review by Harrod (1971), but above all it seems to have been an *IEA* pamphlet by Johnson and Nash (1969) which ignited the spark and caught the attention of the financial community and thus policy-makers. Importantly, the *Economist* had pressed for a floating rate before and after the 1967 devaluation (Anon 1968). Johnson, of course, deserves a special place in the history of economic thought at this time (and not just for his contributions to the monetary theory of the balance of payments), indeed the history of the economics profession, and we await Moggridge's intellectual biography of this important figure.[47] Meanwhile, it is clear that for Johnson, as for many others, part of the appeal of the floating rate was as a preferable alternative to price and income policies which were then scarring British politics and economics and which he had long opposed for exacerbating inflation without curing the condition (Laidler 1984, p. 609).

Thirdly, in America and, to a lesser degree, Britain there were the seeds of what we would later call the New Right which, when combined with the developing monetarist critique of the Keynesian conventional wisdom, was bringing to the fore more market oriented solutions to *all* economic problems. In Britain the foremost proselytizing agency for the market was the IEA (Cockett 1994), one of the sponsors of Johnson and Nash (1969). Indeed, in that volume Johnson introduced the case for flexible exchange rates as 'deriv[ing] fundamentally from the laws of supply and demand,' with the exchange rate a price like any other that would be established efficiently and appropriately by competitive markets if unhindered by government interference (Johnson and Nash 1969, p. 20).

Johnson continued with arguments constructed in terms of the prevailing polarities and calculated to have particular British appeal, including 'flexible exchange rates are essential to the preservation of national autonomy and independence consistently with efficient organisation and development of the world economy' (p. 12), and the 'resentment of the increasing subordination of domestic policy to international requirements since 1964' (p. 13), a component of which was that fixed rates 'gives considerable prestige and, more important, political power over national governments to the central bankers entrusted with managing the system, power which they naturally credit themselves with exercising more "responsibly" than the politicians would do, and which they naturally resist surrendering' (p. 12). As with others before him, he stressed that floating would lessen the pressure on the reserves and thus the potential for sterling to be disruptive to macroeconomic policy, whilst no doubt he also thought that it might hasten the demise of

sterling as an international currency which again would widen the policy space.

Given that the major threats to the reserves had been from sudden crises of confidence, not from the current account balance of payments, an attractive spin could easily be constructed along the lines of the exchange rate rather than the reserves taking the strain. Moreover, in some quarters a flexible rate regime was an attractive option because, to avoid precipitous depreciation of sterling, the move would have to be accompanied by fundamental measures to improve competitiveness, and this part of the case could be made to appeal to the left or the right depending upon where reforms would focus. Conversely, 'Floating could be a euphemistic prescription for a further series of devaluations' (Strange 1971, p. 340) which did not produce such fundamental measures and diverted attention from ways in which the balance of payments, on capital as well as current account, could be improved by addressing the geo-political postures that created the weakness in the first place. Moreover, just as flexible rates could be presented as a counterpoise to price and incomes policies, so could they also to import controls and other restrictive trade measures, the case for which was increasingly being made and would eventually become associated with, first, the Cambridge Economic Policy Group and, later, the Alternative Economic Strategy. Finally, of course, Johnson's optimism about the respective responsibility and prudence of bankers and politicians was highly questionable and not just with the benefit of 20:20 hindsight.[48]

In the event, however, as is typically the case with the major episodes in British exchange rate management, contingent events and short-term responses to external developments actually precipitated the decision to float in June 1972. Heath (1998, p. 409) reports in his memoirs that his government was 'by no means dogmatically attached to the principle of fixed exchange rates,' but that, after Wilson's protracted troubles with sterling, where prevarication had forced 'the worst of both worlds' (devaluation and deflation), 'it was important, given the potential volatility in the markets, that we should give no apparent signals about either revaluing or refloating the pound. Events now forced our hand.' The events in question were manifest in a speculative attack on sterling which had complex causes. One set related to anxieties about British inflation and whether, despite its ideological and policy preferences to the contrary, the Conservatives would be compelled to introduce a statutory price and incomes policy. Another set stemmed from external developments, notably the continuing fallout from the 'fix' attempted at the Smithsonian and the early days of a new manifestation of the European integration project, the EMU 'snake in the tunnel', the precursor of EMS (to which Britain was briefly a member (May-June 1972) as part of its preparations for entry into the EEC which was finally achieved on 1 January 1973).

That the Conservatives were not committed to an immutable fixed rate had been admitted by Barber in his March 1972 budget speech: 'the lesson of the international balance of payments upsets of the last few years is that it is neither necessary nor desirable to distort domestic economies to an unacceptable extent in order to retain unrealistic exchange rates, whether they are too high or too low.' He was careful to ground that statement within the new position that 'both the current balance of payments and our reserve position are much stronger than they were at the beginning of previous periods of expansion' (Hansard 1972a, col. 1354). Received wisdom has it that Barber, backed by Heath, was prepared to abandon adjustable peg to avoid this latest dash for growth running into the sands of a sterling crisis. The Barber boom should perhaps be more attributed to Heath's influence (Porter 1996, p. 38), while the EEC agenda seems also very important, but beyond this we need the official papers to cast new light on this episode.

What is clear is that the collapse of Bretton Woods provided a unique opportunity for the Treasury, but the move to floating rates was seen in June 1972 as temporary and not as some decisive shift in direction. Unsurprisingly, Barber's announcement of the change to the House of Commons was very low key (Hansard 1972b) and the decision had been anticipated – provoked, so say his critics – by Healey, the shadow chancellor (Heath 1998, p.409). The *Economist's* immediate response, in its first leading article after the decision was announced, of 'Float free and low' (Anon 1972) well captures the prevailing mood. We come then full circle: a government now ostensibly committed to a growth target without being hidebound by an external constraint.

4. CONCLUSIONS

British economic policy during the golden age is a story that can be told in terms of 'tinkerers' and 'structuralists' (Bacon and Eltis 1976, p. 1). Within the policy community 'tinkerers' predominated and within their camp the prevailing ethos was that, in the main, adjustments to demand would suffice to attain the government's macroeconomic objectives. Structuralists, by contrast, always in the minority, were preoccupied with the underlying structure of the economy and had in their sights much more fundamental, typically supply-side, reforms since in their view tinkering and the tinkerers were inadequate for the real challenge confronting Britain: that of complete economic, political and social modernization. As policy issues, sterling and the balance of payments actually bridged the divide, but for the most part lay on the side of the tinkerers. None the less, as we have seen there was an important structuralist strand to the story in terms of various growth-promotion strategies, and particularly Keynesian plus, which in the eyes of

their advocates were an important element in strengthening the balance of payments because no amount of tinkering with the exchange rate would suffice, indeed very often it was counterproductive.

We have seen also that amongst the complex characteristics of Britain's balance of payments situation there was also scope, from marginal to more or less radical, to improve the current account by diminishing the drain across the exchanges of 'great power' expenditures by adjusting geo-political posturing more speedily in line with diminished economic capability. Although Britain's great power delusion can be pushed too far, for in terms of the hegemonic international relations literature it is clear that the US assumed less fully than had Britain a number of international roles so that 'American internationalism was no panacea for Britain's post-war problems' (Reynolds 2000, pp. 310–11), it is surely the case that had successive British governments behaved less like US clients, the UK authorities might accordingly have had greater room for manoeuvre in exchange rate policy and in other areas which impacted importantly on the policy space.

We should comment also on the grand narrative of relative British economic decline that now prevails. This is a story of economic underperformance relative to comparators, it is typically calibrated in terms of the emerging gap between Britain and these comparators as measured by GDP per worker-hour, a whole economy labour productivity indicator; the focus for attention in explaining underperformance is typically on the manufacturing sector where the worst elements of the British disease were apparently located, and to which the various modernization and growth-promotion strategies were directed; and the whole story is grounded in terms of the catch-up and convergence literature (see Middleton 2000, ch. 1 for a summary of the growth current debate). This is not yet a story which has taken on board Broadberry's (1997) reassessment of long-term British growth and its important conclusion that Britain lost its lead (as measured by GDP per worker-hour), and Germany (the important European comparator for British policy-makers) and the US caught up, not because of their emerging productivity lead in manufacturing, but by shifting resources out of agriculture and improving their relative productivity position in services. In other words, the US and, to a lesser extent, Germany had long-standing productivity advantages in manufacturing over Britain. From this follows the important implication that to study Britain's long-run decline, one must examine why Britain experienced a loss of productivity leadership in services. This is not to dismiss problems with the manufacturing sector, problems amenable to the remedies that were attempted or discussed as potentially applicable in Britain, but it is to shift the focus to the service sector about which we know far less (Middleton 2000, pp. 60–1).

Combining this with the balance of payments story we have told here leads on to the suggestion that we need as a matter of urgency to re-examine

the performance of Britain's internationally traded financial services since the war. Hitherto, this has typically been a story told by the City about the City, and is one that takes as a given that it was British manufacturing and the visible side of the balance of payments that was underperforming and not the City and the invisible account. Yet, we know that since at least the early 1960s Britain has lost share in the value of world exports of services at a rate similar to that at which it had lost market share in exports of manufactures (Bank of England 1985, p. 410), while a recent assessment of the post-OPEC I British economy, which involved a detailed assessment of internationally traded services' contribution to the balance of payments, produced the conclusion that 'The once fashionable idea that the United Kingdom possesses a considerable comparative advantage [in this area] is not really sustainable' (Haq and Temple 1998, p. 467). Kynaston's (2001) history of the City of London makes clear that the culture of 'short hours, leisurely lunches and long weekends' endured for decades after the war in many City institutions and firms, while even Michie (1998, p. 569), typically a very sympathetic observer of the City, has conceded that for 'a twenty-year period after the second world war ... the City could be accused of possessing a personnel that was not adequate for the domestic and international tasks demanded of it as a financial centre.'

Finally, we must ground our analysis of the golden age epoch in terms of our knowledge that exchange rates have been a particular problem area for the British policy-making community since the end of the First World War. Given the complex difficulties that comprised Britain's exchange rate and balance of payments situation, it is likely that the fuller picture that will emerge will be of a policy community struggling with problems to which contemporaneous developments in international economic theory and policy added little except perhaps to magnify the task – British policy-makers were only too well aware of capital movements and price rigidities – and the sense that solutions to Britain's economic underperformance were more political than economic. We end, therefore, with an apology for the incursion of this economic historian into an economists' conference; an apology also for hardly dealing with the ostensible topic of the conference, but in Britain there were prior matters to do with balance of payments and exchange rate management which had to be dealt with before the issue of progress in economic theory, and its potential application, became relevant.[49]

ENDNOTES

[1] General surveys of sterling and the balance of payments for all of our period are provided by Strange (1971), Sinclair (1985), Foreman-Peck (1991) and Thirlwall and Gibson (1992), with Kunz (1995) providing a general account of postwar sterling crises. For a modern assessment of the particular problems of the Wilson years, see Woodward (1993); for assessments of contemporary thought by those professional economists involved, see Beckerman (1972), a locus classicus of the school that the 1964 failure to devalue fatally compromised Labour's ability to deliver on its growth and modernizing strategy, and Cairncross (1996a). Beckerman was an 'irregular' in George Brown's Department of Economic Affairs, 1964–5, and then the Board of Trade, 1967–9 (upon which see his illuminating account in Beckerman 2000, pp. 165–79) while Cairncross was Economic Adviser to HM Government, 1961–4 and then Head, Government Economic Service, 1964–9.

[2] By the 1960s media freedom was much extended and it is a salutary reminder that as late as 1955 the government sought to impose a rule on the BBC that its programmes would not deal with any topical issue for fourteen days preceding its debate in Parliament (Seymour-Ure 1991, pp. 62, 165–7). This rule was used by Shonfield (1965, p. 401) with great effect, in his magnificent comparative political economy of postwar European economic policies, to explore the peculiarities of the British system and situation.

[3] Browning was the Treasury's chief press officer. This episode forms one of the three case studies in Middleton (1998, pp. 253–68). Since this was published little new work has appeared, but see Bale (1999). Cairncross and Eichengreen (1983, pp. 159–60) refer also to a 'conspiracy of silence in relation to devaluation ...economists hesitated to state publicly the case for devaluation, recognizing that, the more convincingly the case for devaluation was stated, the more difficult it would be for the government to bring it about smoothly and without speculative surges. In practice, as in time became evident, opinion formed itself without professional debate and enormous speculative positions were taken on assessments that rested on simple probabilities rather than economic diagnoses.' Brittan (1971, ch. 8), one of the journalists with insider knowledge, was later to regret being a party to suppression of debate on patriotic grounds.

[4] An incomplete listing of the most important includes Macrae (1963, esp. ch. XI 'The curse of sterling's status'), McMahon (1964), Hirsch (1965), Brandon (1966) and Conan (1966). We ought also to include Shonfield (1965, ch. VI) which developed the ideas of his earlier critique of postwar economic policy (Shonfield 1958), that which popularized the 'over-commitment' explanation of Britain as suffering from excessive national ambition combined with undue attachment to symbols of past eminence, not least sterling's role as a reserve currency. For the development of the sterling debate at this time, see Anon (1958).

[5] He was then Financial Editor, the *Economist*, 1963–6, from whence he moved to become Senior Advisor, IMF Research Department. Interestingly, the dust jacket

front cover carries a sub-sub title (not reproduced on the book's title page) 'Devaluation: the issues'.

[6] The point should be reiterated that the data in Figure 5 (and 6) are the most recent and thus the current account appears stronger than it did to contemporaries.

[7] All of the polemical volumes on sterling published in the 1960s stressed this second characteristic. Strange (1971, ch. 6) provides an excellent political economy assessment of why and with what consequences government overseas transactions impinged upon Britain's balance of payments.

[8] In the 1970 general election with the highly aberrant trade figures published three days before the election date, this just following the English football team's defeat by Germany in the World Cup (Butler and Pinto-Duschinsky 1971, pp. 166, 347n). Ironically, it is probable that these first published estimates were particularly pessimistic; shortly afterwards, the Board of Trade admitted that its procedures underestimated visible exports by about 2 per cent; while 1970 now appears from revised data as having not just a substantial current account surplus (1.8 per cent of GDP) but, unusually, a near zero balance to the visibles account.

[9] Clegg (1996, table 2.1) estimates IDP coefficients (calculated as net outward investment divided by GDP and expressed as a percentage) as follows: 1914 – 56.7; 1938 – 40.4; 1960 – 8.1; and 1971 – 7.3.

[10] Thus Williams et al. (1983, table 1) estimate that in 1971 UK overseas production was 215 per cent of UK exports as against 37 per cent for West Germany and for Japan. The US figure was 393 per cent.

[11] For recent assessments of postwar monetary policy, see Dimsdale (1981) and Howson (1994); for contemporary assessments of our specific period, see Kennedy (1962), Dow (1964), Tew (1978a) and Artis (1978).

[12] Hall was successively Director, Economic Section, Cabinet Office, 1947–53, and Economic Adviser to HM Government, 1953–61. He succeeded James Meade in the former post, and was in turn succeeded by Alec Cairncross in the latter.

[13] The view of an 'inherited crisis' and attempted bankers' ramp of October-November 1964 is put forcefully by Wilson in his memoirs, with his distrust of Cromer, Governor 1964-6, barely concealed (Wilson 1971, pp. 33, 34–8, 129, 251). On the appointment of Cromer's successor, Leslie O'Brien, Governor 1966–71, Wilson (p. 251) noted: 'We now had a totally professional, cool and competent central banker...'

[14] A legacy of the war was perhaps the slow diffusion of a 'public good' model of official statistics, one effect of which was that Whitehall (including the Bank) was slow to respond to growing private demands for accurate and recent data, the balance of payments included.

[15] On sterling, see Johnman (1989) and Klug and Smith (1999); on the broader crisis, Freedman et al. (1988).

[16] The locus classicus for the development of open economy macroeconomics is Kenen (1985) which, for a fuller historical perspective, can be supplemented by Flanders (1989). Both can usefully be supplemented by Mussa (1979) and Isard (1995).

[17] Cairncross and Eichengreen (1983, ch. 4), supplemented by the more recent, often more general works of Cairncross (1985, esp. ch. 7), Pressnell (1987; 2001), Burnham (1990), Schenk (1994), Tomlinson (1997) and Toye (2000).

[18] He was also, of course, a former Director of the Economic Section and had been a central figure in the diffusion of Keynesian ideas during the war, being decisive (with Dick Stone) in the development of national income accounting and its use in macroeconomic policy and in the white paper which committed government to the maintenance of a high and stable level of employment after the war, this taken by many as the formal recognition of the Keynesian revolution in British economic policy.

[19] He was, however, amongst the professional economists the only witness before the Ratcliffe committee who was reported as favoring a floating rate (HMSO 1959, para. 719), this used as a partial justification for preserving the status quo. In fact, Hawtrey had also so testified but this was not mentioned in the committee's report. Laidler (1989, p. 25) in a retrospective on Radcliffe and monetarism, however, which does cite Hawtrey and other 'quantity theory' exponents, concluded that 'there is no more trace of "open-economy monetarism" in the evidence that the committee took, at least from British economists, than there is in its report.'

[20] See, for example, Howson's (1975, app. 4) assessment of the 1931 devaluation, and her analysis of sterling's managed float, 1931–9 (Howson 1980).

[21] Of course, contemporary statistics portrayed a less rosy picture, but it was still one of a surplus.

[22] The ROBOT episode has been the subject of a number of scholarly investigations, by Newton (1986), Milward et al. (1992, pp. 351–9), Proctor (1993), Schenk (1994, esp. pp. 114–19), Bulpitt and Burnham (1999), Peden (2000, pp. 458–62) and Burnham (2000); also less scholarly, more polemical works such as Dell (1996, ch. 5). There are a number of accounts by participants, including the then Chancellor (1951–5), Butler (1971) (+), and MacDougall (1987, ch. 5) (-) and Plowden (1989, ch. 14) (-), two insider economists; and by informed outsiders of various degrees of closeness to the center of power, including Cairncross and Watts (1989, esp. pp. 302–9) (-) in their history of the Economic Section. Robert Hall's (-) diaries are valuable (Cairncross 1989), as is Fforde (1992) who provides the story from the Bank's side. The +/- in parentheses indicates whether the participant/observer was for/against the ROBOT proposals.

[23] Sometimes referred to as the 'External Sterling Plan,' 'ROBOT' had two meanings: the first that of rebalancing economic policy by putting it on an automatic pilot (a floating exchange rate, this determined by the operation of the price mechanism); and the second, a derivation from the names of its three principal advocates, Sir Leslie ROwan (Head, Overseas Finance, Treasury), Sir George Bolton (Bank of England Executive Director principally concerned with overseas finance) and Sir Richard (OTto) Clarke (Under-Secretary, Overseas Finance Treasury), the last of these an unusually dynamic and intellectually adventurous Treasury official, 'an example of the truth that someone who can draft well and quickly can acquire enormous influence. The influence thus acquired is not always benign' (Dell 1996, pp. 166–7).

[24] Cairncross and Watts' (1989) warning, however, is somewhat weakened when a little later (p. 309) they report that Butler was still in favor of a floating rate in 1958, by this time no longer being Chancellor.

[25] Strictly speaking, the formal demise of the floating option came with the defeat later in 1952–3 of what was known as the Collective Approach, a plan for a return to convertibility at a flexible exchange rate which arose at the behest of the Commonwealth Finance Minister's Conference of January 1952, involved a working party on convertibility and eventually its rejection as an option by the Randall Commission on External Monetary Policy which was presented to the US Congress in January 1954 (Schenk 1994, pp. 119–23).

[26] For example, during the Suez crisis, but floating with weak reserves was considered unviable (Peden 2000, p. 465).

[27] James (1996, pp. 99–100) notes that 'As late as 1958, the Governor of the Bank of England whilst arguing on practical grounds against floating, still added: "It would be prudent to organize monetary policy both at home and abroad, on the probability that something like a unified floating-rate policy is inevitable but to make no attempt to force the pace until it becomes more acceptable to the Western world as a whole." Floating attracted the Bank ... because it would allow greater room for interest rates as an instrument for the control of the domestic UK economy.

[28] Edwin Plowden, Chief Planning Officer, Treasury and Chairman, Economic Planning Board, 1947–53; Chairman, Committee on public expenditure (HMSO 1961).

[29] For post-ROBOT external financial policy the following relies upon Peden (2000, pp. 462–5) and discussions with my fellow project members. Peden does not emphasize this fault line within the policy-making community; Cairncross and Watts (1989, chs 17–18), however, highlight tensions between OF and the Economic Section.

[30] Opie (1968) is a classic amongst the disillusioned economists; see also Middleton (1998, ch. 6) for what befell the plague of economists who embraced Labour.

[31] Pemberton (2001b) suggests that a distinct OF strand continued and that they never accepted the National Economy's group even qualified enthusiasm for the growth strategy which was at the heart of Keynesian plus.

[32] This episode forms one of the three case studies in Middleton (1998, pp. 253–68); see also Davis (1968), Britton (197, ch. 8) and Bruce-Gardyne and Lawson (1976, ch. 4) for semi-insider contemporary accounts; Woodward (1993) and Bale (1999) for recent economic (re)assessments, and the Institute of Contemporary British History (ICBH) witness seminar on the 1967 devaluation edited by Brittan (1988).

[33] See, in particular, Beckerman (1972).

[34] For the IMF economists part of the story, see Blejer et al. (1995) and Polak (1995). Fleming (1962) was, of course, a Staff Paper. See also Leeson, this conference.

[35] Of the five economic advisers in October 1964, Balogh opposed devaluation, as did Cairncross, albeit for very different reasons as much to do politics as economics.

Balogh would soon accept the case for devaluation, while Cairncross (1997, p. 1) had been convinced since 1961 'that the pound would have to be devalued at some stage in the 1960s. But I saw no point in devaluing in an overheated economy without the support of stringent deflationary measures which there was no likelihood that the Labour government would adopt.' The pro-devaluation lobby comprised MacDougall, now at the DEA, Kaldor, at the Treasury, and Neild, also at the Treasury.

[36] Thirlwall and Gibson (1992, pp. 235, 238), a view broadly supported by Cairncross and Eichengreen's (1983, p. 216) comparative study of the 1931, 1949 and 1967 devaluations.

[37] This conclusion follows Middleton (1998, p. 268); see also p. 272 where I raise the potential dissonance between Brown's account of events and that of MacDougall (1987, p. 157) and why this needs exploring.

[38] This phrase is usually attributed to Walter Heller, chairman of the CEA, 1961–4.

[39] Calculated from ONS (1999, tables 1.3, 4.1).

[40] Cairncross and Eichengreen (1983, pp. 197–213), Sinclair (1985, pp. 184–5) and Thirlwall and Gibson (1992, pp. 239–43) provide very useful surveys of contemporary assessments of the British devaluation.

[41] The extent of any overvaluation should also be put in longer-term historical context: thus commonly the return to gold in 1925 overvalued sterling by 10-25 per cent, the appreciation of the real exchange rate between 1980–2 was of the order of 25–30 per cent while, upon entry into the ERM in 1990, it was argued that on a FEER basis sterling was overvalued by approximately 10 percent, as indeed would be the case today.

[42] The results were collected as Posner (1978). In addition to Laidler, representing a version of the monetarist position, the models participating in this exercise were those of the Cambridge Economic Policy Group, the London Business School and the National Institute. Laidler's specific proposal was for a 5 per cent devaluation in 1964, followed by a tighter path for Domestic Credit Expansion (DCE) (p. 54), a position he adopted in part because he thought that 'a golden opportunity had been missed in 1963 to exercise patience and break out of the stop-go cycle once and for all while maintaining the exchange rate. Instead a "dash for growth" had been undertaken and the monetary consequences [DCE] ensured that a new government came to power just as the "go" phase of a new cycle was building up to a balance of payments crisis' (p. 53).

[43] In the early 1950s the Treasury's target current account surplus was £300–350m and in the Radcliffe report (HMSO 1959, para. 630) a surplus of £350m for the early 1960s is detailed. Adjusting for inflation this translates into a target surplus of approximately £675m for 1970; the figure obtained was actually £821m on contemporary estimates (Table 4) or £911m on the most recent ONS (1999, table 1.18) estimates.

[44] This, of course, leads on directly to the Thirlwall view that Britain's golden age growth was balance of payments constrained on the demand side. Dubbed Thirlwall's law by a sceptical Crafts (1991, p. 269), this stated 'that except where the balance of payments equilibrium growth rate exceeds the maximum feasible capacity growth

rate, the rate of growth of a country will approximate to the ratio of its rate of growth of exports and its income elasticity of demand for imports' (Thirlwall 1979, p. 50). Crafts' scepticism was that the problem was not on the demand side but that Britain failed to take advantage of fast growing world trade (a system characteristic of the golden age for the ACCs) as a consequence of weak competitiveness associated with low productivity and manifold supply-side deficiencies, in particular that the British labour market appeared to adjust more slowly to shocks than did the more corporatist economies where a more cooperative labor-capital bargain was engineered by the state.

[45] This pegged sterling at $2.60 and it was this parity which was maintained until floating was initiated in June 1972.

[46] The following general accounts appear provisionally reliable: Tew (1978b), Milner (1980) and Dornbusch and Fisher (1980), with Stewart (1977) interesting but more partisan. Economic reappraisals of the Heath government are now beginning to appear, for example Coopey and Woodward (1996) and Cairncross (1996b), while the quarterly *National Institute Economic Review* is an invaluable source and there is much of value in the reflections and analyses contained in F. Cairncross (1981) and F. Cairncross and A.K. Cairncross (1992). See also Harris and Sewill (1975), this setpiece sponsored by the Institute of Economic Affairs (IEA) between an important British exponent of monetarism and the former Chancellor's (Anthony Barber, 1970–4) special adviser. Unfortunately, Barber did not produce memoirs; this government was far less leaky than that which preceded or succeeded it; and the one former senior Treasury official to publish widely on this period (Pliatzky 1984) adds little to our knowledge, being particularly disappointing on the decision to float.

[47] Johnson, who had submitted evidence before the Radcliffe committee, albeit exclusively on domestic monetary policy, was a founder of the Money Study Group, an important British vehicle for the development of monetarist ideas. This was the first stage in the development of a more independent British strand of monetary research, developing at the LSE (the International Monetary Economics Research Programme of Johnson and Swoboda), at Manchester (the Inflation Workshop of Laidler and Parkin) and, somewhat later, at the City University (with Griffiths and Wood in the Centre for Banking and International Finance). These research program were more appropriate to British conditions as an open economy with, by US standards, a comparatively large public sector and a central bank under greater political control.

[48] See, for example, Einzig's (1970) dire warnings that flexible rates would result in a 'gnomocracy' with sterling at the mercy of currency speculators.

[49] Full access to the PRO papers is particularly important because as Cairncross (1985, p. xiii) has found, although they 'supply some piquant details on the lines of argument ministers were prepared to entertain ... they do not add a great deal to our knowledge of what they decided. What the papers do reveal more adequately is what went on at the official level, the techniques of analysis that were being developed, the possibilities of action that were being canvassed, the thinking and differences of opinion that underlay the ministerial pronouncements.'

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Discussion

Roger Middleton's

STRUGGLING WITH THE IMPOSSIBLE: STERLING, THE BALANCE OF PAYMENTS AND BRITISH ECONOMIC POLICY, 1949–72

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It is common knowledge that the experience of the Canadian economy under flexible and then fixed exchange rates in the 1950s and 1960s had a great deal to do with shaping what we now call the "open economy macro-model". But Roger Middleton's fine paper reminds us that Canada is not the only open economy which had an interesting monetary history in the third quarter of the 20th century. Though no specific model in the current canon is associated with the UK's experience, in the way in which the Mundell-Fleming model is associated with Canada's, I shall use these comments to suggest that this experience was nevertheless important to the development of theories of inflation in open economies, and to our current understanding of issues concerning their choices among monetary policy regimes.

Nowadays, when the preferences of many economists and policy-makers seem to be polarising between hard fixes on the one hand, and flexible rates backed by domestic inflation targets on the other, the influence of this UK experience on economic thought deserves a little attention. Central to the experience described by Middleton was a shift from an adjustably-pegged exchange rate to a flexible rate backed by no clear goal for domestic monetary policy, and for some of us, it provides a prime example of the dangers inherent in such intermediate regimes. The reader should be warned, however, that I was myself involved in later stages of the debates that Middleton discusses: what follows is not, therefore, the work of a disinterested historian.

Middleton's account of the "stop-go" UK economy of the 1950s and early 60s, conforms very much to my own memories. Unemployment rates that now seem incredibly low by the standards set from the mid-1970s onwards

were very much taken for granted in those years, it was widely suspected that the business cycle was a thing of the past, and the macro-policy goals that attracted attention were the promotion of economic growth, the maintenance of a sustainable balance of payments at the post-1949 parity, and the containment of inflationary pressures, which (again by later standards) were extremely mild.

As a matter of fact, however, and as Middleton's paper documents, every time the economy's growth rate picked up, this was in short order followed by upward pressure on the inflation rate, and a balance of payments problem that triggered contractionary macro-policy. "Go" then gave way to "Stop" as the rate of real expansion slowed, unemployment increased, inflationary pressures abated, and the balance of payments improved, albeit relative to what turned out in hindsight to be a secularly deteriorating trend. Given the political importance of maintaining low unemployment, and given the popularity at the time of invidious comparisons of British economic growth with that of the recovering economies of Western Europe, the fiscal and monetary stimuli needed for the next "Go" phase were not long in coming.

There were at the time commentators who took the view that the root cause of the economy's recurring inflationary and balance of payments problems was the maintenance of an optimistically low unemployment rate. Lionel Robbins, among others, made this point in his evidence to the Committee on the Working of the Monetary System, better known as the Radcliffe Committee in 1958, but the research of Bill Phillips (1958) and Frank Paish (1962) on the inflation-unemployment trade off suggested that what we would now call the British economy's "natural" unemployment rate was probably in the region of 2 1/2 per cent, a level that was popularly regarded as unthinkably high at that time, so these arguments had little influence outside of academia, except perhaps among the then small right-wing of the Conservative Party. This was, moreover, the period of the "cost-push" vs "demand-pull" debate about inflation and the cost-push side was very much in the ascendency in the UK by the early 1960s. Exponents of a traditional quantity theory based view of inflation, which stressed the role of monetary policy, received short shrift from the *Radcliffe Report* in 1959, which came from a committee that had been set up in large measure as a response to conflicts about the role of monetary policy within the ruling Conservative government.

As a result, the supporters of this traditional view within the Conservative Party, who included Peter Thorneycroft and Enoch Powell, lost whatever influence they might earlier have wielded, and the field was left open to Harold Macmillan and his circle, which included Reginald Maudling, to institute a policy agenda in the early 1960s that was based on an altogether more radical brand of macroeconomics whose influence would persist into the early 1970s. Here, historians of economic thought should note that among

the British academic economists who were particularly influential in policy circles in the 1960s, there were some – for example, Sir Roy Harrod among those who made Conservative economic policy after 1960, and Nicholas Kaldor in the Labour Party which took office in 1964 – who were also important participants in the "monetarist-structuralist" debate about inflation in Latin America in the 1960s, and were very much on the structuralist side of the question. Baer and Kershenetzky (1964) provides an excellent and balanced collection of papers setting out the issues at stake in this debate, including contributions from these two.

How significant the influence of these or any other particular individuals on policy in fact was is an interesting question for further research, but there can be no doubt that what the UK got in the early 1960s, and again in the early 1970s, was a macroeconomic policy based on structuralist ideas. Basic to this way of thinking was the idea that inflation was a cost-push, more particularly a wage-push, phenomenon with deep roots in the economic and social structure of the UK . It was said to stem proximately from the fact that the population's aspirations for rising income were systematically outstripping the growth of output, an imbalance that could be eliminated by instituting fiscal expansion, accommodated by monetary policy. The boost to output which such policies would create, provided that they were sustained long enough, were expected to create a breakthrough to a new, permanently higher, rate of growth, and therefore to a new, permanently lower, rate of inflation.

If traditionalists such as Robbins and Paish can be characterized as suggesting that Stop-Go was to be blamed on the authorities placing too much emphasis on "Go", structuralists such as Harrod and Kaldor, took an exactly contrary position: in their view there was far too much emphasis on "Stop" in post-War British policy.

Be that as it may, a structuralist-style policy was instituted in 1962 under the slogan "Go for Growth" but the experiment duly ground to a halt in a balance of payments crisis and the electoral defeat of the Conservative government in 1964. Perhaps in 1964, the newly elected Wilson government would have been wise to let bygones be bygones, immediately devalue sterling, and set about repairing the damage done in the previous two years; but with the 1949 devaluation already on the Labor Party's record, it was decided to defend the parity. As a result, the British economy struggled with a protracted slowdown until the 1967 devaluation. What is important in the context of Middleton's paper, however, is not so much to second-guess these decisions about exchange rate policy, but to draw attention to the lesson derived from the post-1962 "Stop-Go" experience by those who believed in demand-led economic growth as a cure for inflation. They concluded, not that their policies had been mistaken, but that a balance of payments "constraint" had forced the attempt to break through to a permanently higher rate of

growth to be cut short prematurely. It seemed to follow that, if this constraint were to be removed by adopting a flexible exchange rate, then, the next time their policies were tried, they would meet with success.

Now when Milton Friedman (1953) had revived the case for exchange rate flexibility, he had done so mainly on the grounds that adjustments in what we would nowadays call the "real" exchange rate could be more easily managed by permitting the nominal exchange rate to vary than by trying to make domestic money wage adjustments to which the political response might be attempts to restrict international transactions. From the early 1960s onwards, this argument had been supplemented among many flexible-rate supporters by another that derived from treating the Phillips curve as an explicit policy menu: there was no reason to expect that the inflation-unemployment trade-off would be available on the same terms in different countries, nor that different electorates' tastes vis-à-vis these variables would be the same; therefore, so the argument went, movements in the exchange rate would be needed to accommodate otherwise inconsistent choices. Even Phillips himself toyed with this idea in his inaugural lecture as Tooke Professor at the LSE in 1961. (See Leeson (ed.) 2000, p. 222)

The first of these arguments had convinced the Canadian authorities to adopt a flexible exchange rate in 1950, and the second is often cited as having had crucial and misleading influence in the early 1970s. I cannot speak about other countries here, but in the case of the UK, I do not believe that a flexible exchange rate was chosen in 1972 so that the economy could enjoy lower unemployment at the cost of a higher inflation rate. The decision to float was taken so that the Heath - Barber "dash for growth", which was in many respects a rerun of Maudling's 1962 "go for growth" experiment, would not be obstructed by balance of payments problems. A flexible exchange rate would remove that obstacle, expansion could be sustained until the labor forces' appetite for more rapidly rising real incomes could be permanently satisfied, and low inflation would be rendered sustainable. And incomes policies, when they were put in place in Britain, were not usually justified as devices that would "shift the Phillips curve." Rather, they were seen as means of preventing groups with market-market power putting the breakthrough to higher growth in jeopardy by prematurely attempting to seize more than their share of its fruits.

At the beginning of this comment I referred to current tastes in exchange rate regimes becoming polarized between hard fixes on the one hand, and floats backed by domestic inflation targets on the other. These two regimes are very different, but support for both of them nevertheless rests on certain common beliefs: namely, that economic growth is dependent on supply side factors and cannot be promoted by expansionary aggregate demand, that political temptations to undertake the latter type of policy must be constrained, and that this can be done by giving firm priority to stabilizing a

nominal variable – the exchange rate, or the inflation rate – among the goals of monetary policy. As Middleton's account of UK experience shows, these beliefs have not always been commonplace, and the alternatives to them that have sometimes been entertained sometimes had a very destructive influence. That his why his paper, and this, its moral, are worth the serious attention of anyone interested in macroeconomic policy in open economies.

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Chapter 6

THE ADAM KLUG MEMORIAL LECTURE:

HABERLER VERSUS NURKSE: THE CASE FOR FLOATING EXCHANGE RATES AS AN ALTERNATIVE TO BRETTON WOODS?

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1. INTRODUCTION

From the perspective of the late 1930s and 1940s, the dominant view was that the interwar experience was a financial disaster. This view is perfectly encapsulated in the League of Nations' publication *The Interwar Currency Experience*, the bulk of which was written by Ragnar Nurkse, published in 1944 and in the League's parallel 1945 publication, *Economic Stability in the Post-War World*. It also was the view behind the Keynes and White plans for international monetary reform, which culminated in the Bretton Woods conference.

According to this view:

the floating exchange rate experience of the 1920s was marked by destabilizing speculation and instability

the gold exchange standard did not work because it unilaterally imposed deflationary adjustment on deficit countries while surplus countries sterilized

gold inflows, and because of a wrong choice of exchange rates after World War I, and because of a general shortage of gold

– short term capital flows ("hot money movements") were destructive in the 1930s

– competitive devaluations in the 1930s ("beggar-thy-neighbor") were counter-productive

– all these factors destroyed the multilateral payments system and a movement toward bilateralism and autarky ("Schachtianism"), and the breakdown of international trade played an important role in the origins of the Second World War.

This perception of events led to the case for capital controls and an adjustable peg, or parities that could be altered in the case of fundamental disequilbrium. What would now be known as the "corner solutions" of gold standard rigid fixing or floating rates were rejected. The gold standard was criticized because it subordinated domestic goals such as full employment or price stability to external stability. Capital controls were required to prevent destabilizing speculation and to allow some degree of domestic policy autonomy. An international financial authority was needed to prevent harmful interactions between different national policies, or to further coordination of economic policy.

The Bretton Woods system was established, but it was only in the late 1950s and early 1960s that the major industrial countries made the transition to current account convertibility. It rapidly unraveled, because countries found it hard to identify fundamental disequilibria, or to change exchange rates. In the meantime, the exchange rate offered a nice target for speculation, which capital controls were in practice unable to control. As the US provided the reserve center for the system, and as claims against the US built up, the US became the subject of possible speculative attacks. The clearly visible defects of the Bretton Woods system led to a case for generalized floating, a case which in fact had already been made in 1953 by Milton Friedman.[1] By 1973, generalized floating provided the basis for a new system or non-system in international monetary relations.

Modern economic historians view the experience of the 1920s and 1930s differently.[2] Exchange rate instability reflected destabilizing monetary and fiscal policies. Competitive devaluations were less disruptive to trade than was believed, and the fundamental problems came from high tariff levels and above all from quotas. The case of French floating in the 1920s was the outcome of political dissension about appropriate fiscal policy, and British floating in the 1930s was a clear success. Capital flows reflected underlying fundamentals, in which inconsistent policy mixes produced incredible policies that made currencies vulnerable to speculative attacks. The exchange rate system provided a mechanism for the transmission of monetary shocks.

Could there have been an alternative route to 1973? A strong intellectual case for floating had already been made earlier than 1953, in the work of Gottfried Haberler. He argued that a floating exchange rate could insulate countries from the transmission of booms and depressions. His view is a clear predecessor to the open economy Fleming-Mundell model.

Why was Haberler's analysis not taken more seriously at the time of the wartime discussions of a postwar monetary system. In part the answer is that Haberler was an analyst not an advocate, moreover he believed that the interwar experience with devaluation and floating was unsatisfactory because floating was associated with destabilizing speculation. In part the answer is that his approach was viewed as anachronistic since it did not follow the Keynesian lead; and in part the 1930s was in the grip of a real terror about capital movements because they were so clearly and intimately associated with political crises. Indeed, in 1945, even Haberler subscribed to the Nurkse-Bretton Woods consensus.

Section 2 examines the views of Nurkse and the Bretton Woods mainstream. Section 3 develops Haberler's analysis in the 1930s of the transmission of business cycles under fixed and floating rates and considers why, although he presented the case for floating, he was not an advocate. Section 4 looks at the resistance to Haberler's analysis of floating in the League of Nations and elsewhere. Section 5 concludes with a discussion of Haberler's postwar advocacy of the case for generalized floating, his critique of the adjustable peg and his reinterpretation of the events of the interwar.

2. RAGNAR NURKSE AND THE BRETTON WOODS CONSENSUS

The League of Nations, and in particular its Economic and Financial Organization, had played a major role in international economic relations in the 1920s. In the 1930s, however, the League was under attack. As a peacekeeper, it was undermined by its failures in regard to the Japanese invasion of Manchuria and the Italian invasion of Abyssinia, by the absence of the United States and the Soviet Union, and by the Nazi decision to leave the League and unilaterally pursue rearmament. In economic matters, the credibility of the League was undermined by the failure of the London World Economic Conference of 1933 (Clavin 1996). None of the suggestions for a tariff truce or for monetary stabilization seemed to stand much chance of success.

The League retreated into discussions of policy that might be appropriate in a national setting. In October 1937, it initiated a large scale inquiry into "measures which might be employed with a view to the prevention and mitigation of economic depressions." As part of this exercise, it initiated a

series of discussions between a large number of prominent economists, which eventually resulted in the publication of a blueprint for a new economic order under the title *Economic Stability in the Post-War World* (1945).

Most of these discussions, and the book that Haberler had previously written for the League on *Prosperity and Depression* had their major emphasis on national policy, and not on international monetary arrangements. A League official, Pietro Stoppani, wrote that:

> During recent years the type of work undertaken by the Economic and Financial Organization of the League has undergone a rather striking development. Political and economic circumstances have rendered difficult the conclusions of conventions and multilateral agreements... This state of affairs has led the Economic and Financial Organisation to concentrate increasingly on the study of problems common to all countries as distinct from problems of international economic *relations*. The method which has been adopted has been that of expert, scientific enquiry into particular problems with which states are faced both internally and in their relations with other states.[3]

During the War, however, it became clear that an examination of international monetary issues would be critical for the making of the postwar settlement, and the League Economic and Financial Organization set about preparing a survey of interwar currency experience. That work was mostly written by Ragnar Nurkse.

It is worth thinking about Nukse's personal trajectory. Nurkse was born in Estonia of an Estonian father and Swedish mother, but his family emigrated to Canada and he studied in Edinburgh and then in (crucially) Vienna, where he worked with the major figures of the Austrian school – Haberler, Hayek, Machlup, Mises and Morgenstern. Vienna was crucial; not only was it the center of a tradition of economics; but with the Creditandsalt collapse of 1931, it provided the epicenter of the world financial crisis. At a critical time for Nurkse, with the experience of banking and currency crises of 1931, capital flight appeared as the pressing issue for contemporary economics. Machlup in 1932 in *Weltwirtschaftliches Archiv* published a paper in which he examined how capital flight contributed to banking collapses as well as to obvious balance of payments difficulties, in that in order to make movements across the exchanges, speculators withdrew deposits from banks and endangered the banking systems. If central banks tried to compensate with increased liquidity for such withdrawals, they lost reserves and their exchange rate was endangered. Governments reacted with exchange controls, "police measures, penal sanctions and confiscation" which diminished the propensity to save, to invest capital, and added to the "psychological roots of capital flight."[4]

Nurkse's first article was on the "Causes and Effects of Capital Movements," which became the basis for a book published in 1935. In the meantime he had moved to Geneva to a post in the League of Nations Financial Section, which moved from Geneva to Princeton during the War. At first he worked closely with Gottfried Haberler in Geneva too. In Princeton he was part of a team of distinguished economists including J.B. Condliffe, Marcus Fleming, Folke Hilgerdt, Jacques Polak, and Louis Rasminsky.

His major work in Princeton involved the preparation of a League Publication which was circulated in roneographed form to the delegations arriving in the summer of 1944 for the preliminary meeting at Atlantic City that prepared the agenda for the United Nations Monetary Conference at Bretton Woods. Except for Chapter VI (on Exchange Stabilization Funds) this book, *International Currency Experience: Lessons from the Inter-War Period*, was written by Nurkse, although it was extensively commented on by members of what had become the League's "Economic, Financial, and Transit Department", and in particular by the director of the department Alexander Loveday.

That book distilled a series of lessons from the interwar experience that lay behind the Bretton Woods solution. There is actually a strong personal link between the League, its lessons, and the new order. Indeed Nurkse was offered a senior position in the institutions created at Bretton Woods, the International Monetary Fund, which he turned down to take a chair in Columbia University; but a number of his colleagues at the League did go to the IMF. Some of them – especially Polak – saw the IMF as a continuation and extension of the experience and work of the interwar League.

According to Nurkse's interpretation, the circumstances of postwar reconstruction after the First World War held some crucial lessons for what should be avoided after the Second. In particular:

1. Much of the instability of the 1920s stemmed from the exchange rate depreciations at the beginning of the decade. At first depreciations in the continental European economies stimulated the economies, by creating price advantages for export industries. Since the depreciated rates were believed to be temporary they attracted capital inflows. But as depreciation continued, and the prospect of a return to pre-war gold standard parities looked less and less likely, the advantages disappeared. Wages rapidly adjusted to depreciation and removed the cost advantage for exports. A "cumulative process of capital flight" began. Nurkse concluded that "exchange depreciation was a fitful and unreliable method of attracting foreign funds to replenish the national working capital, a method depending on the interplay of speculative anticipations" (115). The French franc in the 1920s offered a particularly intense example of how freely fluctuating rates could not be maintained "on an even keel" (119) but tended to overshoot.

2. When currencies were eventually stabilized in the mid-1920s, they were stabilized at the wrong levels. Again, this result had been produced by the perverse effects of capital movements. "The rates at which exchanges were fixed had been reached frequently under the influence of abnormal short-term movements with the result that some currencies were overvalued and others undervalued...The two most familiar but by no means the only sources of disequilibrium arose from the successive stabilization of the pound sterling and the French franc early in 1925 and late in 1936 respectively, the one at too high and the other at too low a level in relation to domestic costs and prices." (116-17)
3. The 1920s lacked a proper system of coordination for achieving a stable set of exchange rates. "It was partly because of the lack of proper coordination during the stabilization period of the twenties that the system broke down in the thirties." (117) In part this absence of coordination reflected the absence of a hegemonic power. Here Nurkse sketches out an argument later associated with Kindleberger: "The gold exchange standard suffered from the coexistence of at least two centres. Shifts of reserves from one centre to another gave rise to gold movements, and the liquidity of each centre was therefore liable to strains." (217)
4. In the 1930s, countries engaged in competitive devaluations in part to get trade advantages (beggar-thy-neighbor policies), but in large part also because the exchange rates were driven by "speculative capital movements." The countries concerned did not really want widely fluctuating rates, but there was no alternative: "the level at which official controls stepped in to steady the exchange by one means or another was often reached in quite abnormal conditions." (123)
5. The frequency of exchange adjustments was a major cause of the destruction of the international trading system. "The more frequent the exchange adjustments, the stronger are likely to be the disequilibriating tendencies not only in the capital flow but also in the movement of trade; the more frequent and disturbing will be the internal shifts of labour and other resources; the more seriously will exchange risks hamper foreign trade." (141)
6. In the interwar system, international monetary policy had been increasingly set to conform with domestic objectives, in particular attempting to deal with the problem of unemployment, but this had produced the destabilizing depreciations and capital flows. A postwar monetary order would thus have to "find a system of international currency regulations compatible with the requirements of domestic stability." (230)
7. Nurkse drew from these analyses the conclusion that first, initial exchange rates in "the establishment of an initial system should be made by mutual consultation and agreement", and second, that subsequent alterations should be as rare as possible, but should not be impossible. They "should not be

altered by arbitrary unilateral action." (141) "Changes in exchange rates are likely to be the more effective the less frequently they occur. Exchange stability should be the norm and exchange adjustment the exception." (225)

It is striking that there is one continuous villain, which explains why cumulative depreciation got under way in the early 1920s, why stabilization took place at the wrong levels, and why competitive devaluations wracked the 1930s. That villain is the movement of capital. There seems to have been a general consensus among the League economists in this issue. The director of the EFO Alexander Loveday, explained that "international lending was a bad method of combating economic depressions. When times were bad, the default which eventually ensued intensified the existing depression and led to currency depreciation." He recommended a negative attitude on this point and personally preferred the export of capital on an equity, not on a bond basis.[5]

The argument expounded by Nurkse relies heavily on the idea that hot money flows, which had in particular been a concomitant of political crises in the 1930s and which were thus thought to undermine democracy and international peace as well as international economic relations, were triggered primarily by expectations of exchange rate movements. Nurkse uses a quotation to hammer his point home: "When...national policies cease to regard the maintenance of exchange stability as something which must take precedence over all other considerations,...speculation regarding the probable movement of the exchanges, and capital movements in connection with such speculation, are normal and inevitable" (131). This quotation is from Gottfried Haberler's *Prosperity and Depression* (431). But Haberler's analysis really runs in a quite different direction.

3. GOTTFRIED HABERLER AND THE INTERNATIONAL TRANSMISSION OF BUSINESS CYCLES

Gottfried von Haberler, born in Purkersdorf, Austria in 1900 was one of the leading members of the Austrian School of Economics. He studied at the University of Vienna in the early 1920's under Friederich von Wieser and Ludwig von Mises, and was a classmate of Friederich von Hayek, Oskar Morgenstern and Fritz Machlup. After receiving doctorates in Law (1923) and in Economics (1925), he spent two years studying in the United States and Great Britain under a Rockefeller Foundation grant. He returned to Vienna and taught there from 1928-1936. During that period he was also a Visiting Professor of Economics at Harvard (1931-1932) and held an appointment with the League of Nations in Geneva (1934-1936) that led to

the publication of *Prosperity and Depression* in 1937. Haberler moved to the United States in 1936 and became Professor of Economics at Harvard University where he remained until retirement in 1971. He spent the rest of his life (1971-1995) as Senior Scholar at the American Enterprise Institute in Washington D.C.[6]

Haberler's major contributions to economics were in the study of business cycles, the subject of this paper,[7] in the theory of index numbers, and in the theory of international trade.[8]

Gottfried von Haberler's book *Prosperity and Depression* began as a short (47 pages) brochure produced as part of a major inquiry commissioned by the League of Nations, and funded by the Rockefeller Foundation, into the "Causes of Recurrence of Periods of Economic Depression." It was circulated in August 1934, with an invitation to comment, to a substantial number of prominent economists, under the title "Analysis of the Theories of the Business Cycle." This paper included only a few introductory and general comments on international aspects of the business cycle, arguing that cycles had become international as a consequence of increased international interconnectedness. In particular, cycles might be linked through:

1. Changes in demand and supply of particular commodities.
2. Movements of capital. Haberler added the comment: "Here again it is not a priori clear that the influence is such that prosperity in country A tends to create prosperity in B, and depression in A depression in B. It is conceivable that prosperity in A draws upon the capital supply of B and has therefore an adverse influence on B."
3. The international money mechanism ("the most important vehicle of prosperity and depression from country to country, the most powerful force which tends to bring about far-reaching mutual adjustment of the cyclical movement in various countries"). Haberler noted: "Countries which have adopted the same standard of value (which are on the gold standard), or, more generally speaking, have adopted the policy of keeping the exchange rate fixed (exactly or approximately), are bound to move in the same direction as far as expansion and contraction in the circulating medium is concerned. An expansion in one country will ease the monetary situation in another and will tend to drag it along in the same direction."[9]

There is here no consideration of the role of monetary policy, and the whole passage is in fact rather unsatisfactory. Very few of the comments supplied by the economists took on this aspect of the paper, and most concentrated on the discussion of domestic anti-cyclical policies, the treatment of Keynes, and the relationship between saving and investment (and the problematical definition of these terms, which Haberler used in a different sense than did Keynes). Only Alec Macfie wrote to Haberler to ask for more on the international side: "It seems to me that your work will be most valuable if it concentrates on the international aspects of the system. We

in Britain feel, I think, that if the cycles were a purely internal matter, then our banking system could control it."[10]

The book manuscript of *Prosperity and Depression*, which developed on the basis of the 1934 paper, was circulated to a smaller circle of economists: D.H. Robertson, Tinbergen, Robbins, Morgenstern, Bresciani-Turroni, Dupriez, Rist, Ohlin, Hansen, J.M. Clark, and Oskar Anderson.[11]

3.1 International Business Cycles under Fixed Exchange Rates

In *Prosperity and Depression*, (1937 and subsequent editions), chapter 12, Haberler analyzed the international characteristics of business cycles. His methodology was to start with the assumption that the world consisted of sovereign nation states that used a common currency and that there were no impediments to the movement of goods and factors of production. From that simple perspective he then introduced, one by one, the real world complications of tariffs and transportation costs; impediments to capital mobility; and national currencies and alternative monetary standards. Within each of these categories he then analyzed the international transmission of shocks (both real and monetary).

We focus on the role of monetary standards.[12] Haberler (425-427) analyzes international transmission first treating the world as a unified currency area (using gold coins as currency with bank money convertible into coin) without and then with national central banks (such as the present day European Union). Without impediments to capital mobility, transmission of real shocks occur via gold flows amplified by capital flows. Central banks have no scope for neutralization. The only role for an independent monetary policy is "if credit is localized" (428). Under this circumstance central banks can temporarily sterilize gold flows but they are limited by the size of their gold reserves in the case of an outflow, and the stock of government securities in the case of an inflow.

Next Haberler assumes a world close to the classical gold standard in which each country has its own national currency fully convertible into gold (430). The analysis of transmission and insulation is the same as that of the unified currency area. However, here he introduces the possibility of destabilizing capital flows, if the commitment to gold is not completely credible. "[t]he mere anticipation or apprehension of exchange rate variations will suffice to give rise to speculative movements of capital from one currency to another" (430). Indeed here he clearly distinguishes between stabilizing short-term capital movements "if it is believed that no change will take place in the exchange rate"[13] and destabilizing speculation in the case where

> the adverse development of A's balance on trading account is expected to be sufficiently considerable and sufficiently lasting to cause a transfer of gold from A to B on such a scale as to lead to the abandonment of the gold standard by A. There will be a flight from A's currency to B's which will accentuate the gold export and either advance the day when the gold standard must be abandoned or force A to a more severe deflation than would otherwise be necessary ... Anticipations regarding movements in the foreign exchanges tend to their own fulfillment. (431)

3.2 International Business Cycles under Floating Exchange Rates

The fixed exchange rate standard is then compared to a world of freely floating exchange rates. Before analyzing a free float, Haberler considers devaluation from a fixed exchange rate as a deliberate policy action. Two cases are distinguished. The stable case where it is believed that the devaluation is expected to be permanent, and the unstable case where it is believed that the devaluation is insufficient to restore balance of payments equilibrium. In the former case, a devaluation will be successful in improving the balance of trade and raising the level of income based on the implicit assumption that the demands for both imports and exports are elastic.[14] Moreover capital inflows will speed up the adjustment. Opposite effects will occur in appreciating countries. The net effect for the world as a whole depends on whether the devaluation "corrects an overvaluation" of the depreciated, and an "undervaluation" of the appreciated currency." (439)

In the second case, which Haberler (436) and also Haberler (1936,44) believes is much closer to the interwar experience, a devaluation which is not believed to be sufficient to restore equilibrium will lead to capital flight and to instability in the exchange markets. In this case capital flows will have a deflationary effect on the world as a whole. (440)

Haberler (441-451) then turns to the case of floating exchange rates ("free floats"). Although he states that "it is not suggested that such a system has ever existed in a pure form" (411), he views the analysis of business cycles under floating as valuable because of the contrast with the gold standard. Under a free float, equilibrium in the balance of payments is maintained by variation in the exchange rate whereas under the gold standard equilibrium requires gold flows. (442)

Haberler compares the transmission of real shocks (a change in tastes or a change in investment demand) under floating and under the gold standard, in the case where capital is immobile (443). If there is a shift of demand from country A's products to those of country B, the following occurs under floating: the value of A's currency falls relative to that in B. Assuming elastic

demands for exports and imports, the exchange rate completely equilibrates the balance of trade. This is compared to a gold standard where a gold flow is required to restore equilibrium,

> By reasoning not essentially different from the above, it can be shown that, under free exchanges without capital movements, there will be no tendency for prosperity or depression to communicate itself from country to country (446)

and after analyzing the effect of an investment boom in country B on country A he states

> The free-exchange system eliminates from the economic interchange of different countries the most important carrier of the boom and depression bacillus–namely the flow of money across frontiers.

Thus a key implication of Haberler's analysis [although he didn't state this at the time] is that floating exchange rates could have prevented the international transmission of the Great Depression.

Haberler later qualifies his analysis of the insulation properties of floating rates. In a passage which nicely presages the analysis of Mundell (1963), he demonstrates that if capital is completely mobile, then real shocks (such as an investment boom) will be internationally transmitted as under the gold standard, but that changes in monetary policy can lead to perverse effects on other countries. At the same time however domestic monetary authorities have the leeway to stimulate the economy unlike under the gold standard.

> Suppose that a boom flares up in country D because new investment opportunities have appeared. If this attracts foreign capital the expansionary stimulus is at once transmitted to the other (capital exporting countries), while the expansion is hampered in the country D, where the stimulation first arose. If on the other hand the expansion in D is brought about or fostered by a cheap money policy and if thereby capital is driven out of the country (to take advantage of the higher interest rates abroad), the expansion in D is further intensified by the outward capital movement. The outside world instead of basking in the rays of prosperity cast by D, feels a chilling wind from that quarter and may even be thrown into a vicious spiral of deflation (449).

Compare this analysis to that of Mundell (1963), and also Meade (1951) and Fleming (1962), where under floating exchange rates with perfect capital mobility, although a rise in the domestic money supply creates an incipient balance of payments deficit at home and surplus abroad leading to a depreciation of the home currency, the concomitant decline in interest rates induces a capital outflow which further depreciates the home currency. Demand for the home country's goods is thereby stimulated and demand for

the foreign country's goods is reduced, raising income at home and reducing it abroad.[15] With capital mobility, monetary expansion at home leads to a recession abroad.

Under floating exchange rates, an increase in government expenditure in one country raises real expenditure including the demand for imports, hence depreciating the exchange rate. With capital mobility, however, the rise in interest rates induced by the increase in government expenditure leads to a capital inflow, which offsets the effect of the current account imbalance on the exchange rate. At the same time, the capital outflow from the foreign country depreciates its exchange rate, stimulating the demand for its goods. Hence real output abroad rises.[16,17]

3.3 What did Haberler Really Believe about Floating Exchange rates?

A reading of *Prosperity and Depression* chapter 12 leads to a schizophrenic interpretation of Haberler's views on floating rates. On the one hand, the quotation from page 431 that Nurkse used in his attack on them, gives the impression that Haberler himself was also very opposed. This is also echoed in his earlier book *The Theory of International Trade* (1936) where he states:

> Both commercial and financial relations with foreign countries are at once sensibly affected by flutuations of the exchanges. Speculation in the foreign exchange market develops, unless rates are kept absolutely stable, and international credit-operations of a normal kind are seriously hampered thereby. (44)

On the other hand, from a reading of the discussion of free floating from pages 441-451 in *Prosperity and Depression* covered in section 3.2 above, Haberler succinctly analyzed the role that floating could provide as an insulator against international disturbances and as fostering the conditions for monetary independence.

Which Haberler are we to believe? The answer lies in the perception of the events of the interwar period that Haberler and his contemporaries all had–that departures from the gold standard occurred in the face of serious speculative attacks, that devaluations were almost always accompanied by capital flight, and the French experience with floating as a free-fall. They did not seriously consider the connection between unstable fiscal and monetary policies and unstable exchange rates or the possibility that stable financial policies could foster stable floating rates.

Haberler himself was strongly influenced by the events in central Europe that he had previously experienced. In *The Theory of International Trade* he writes:

> In financially weak countries–particularly where the memory of inflation is still fresh–every deviation of the exchange rate from gold parity, or even any likelihood of such deviation must lead to a crisis of confidence and to withdrawals of credit. This has been demonstrated once more by events in Germany in 1931 and 1932.

Yet he was also aware of the successful experience that England had with floating after September 1931:

> Since departing, in September 1931, from the gold standard, England has followed more or less deliberately and with the support of many English economists a policy of stabilizing the price level. This policy enabled the Scandanavian countries and the Dominions to reap the advantages of stable rates with England–still the center of world trade–and with other members of the sterling-group, and to maintain stability of prices relatively to one another. (45)

However, he goes on to say that

> the instability of the exchange rate between the gold-standard and the sterling-currencies has led to serious disadvantages. The conclusion seems therefore justified that stable exchange- rates, or in other words an international standard of one kind or another, is indispensable in the long-run for any extensive exchange of goods and credit on an individualistic basis. (46)

Thus Haberler, like Nurkse, was a captive of the contemporary perception of the tumultuous events of his time. In *Prosperity and Depression* his analysis led to the theoretical possibility that floating exchange rates could have cut short the international transmission of the Great Depression but he did not state this. Thus although Haberler laid the intellectual ground work for the case for floating it seems unlikely that he would have been its advocate before World War II.

Indeed in an article written at the end of World War II for a panel session of the American Economics Association considering post war policies, Habeler made a strong statement against floating

> ... it is certain that a system of "free exchanges" would lead to extremely undesirable results. It would incite capital flight and violent fluctuations. There are very few instances of really free exchanges in monetary history and none that could be called successful... such a free system would be even worse this time [compared to the French case after World War I]

> because people everywhere are much more inflation conscious than they were in 1919, and hence, speculative reactions would be very quick (1945, 209).

In sum, although Haberler definitely presented a clear alternative to the adjustable peg with capital controls that the world adopted at Bretton Woods in 1944, it seems unlikely that he would have been the person to advocate it.

4. THE CONTEMPORARY RESPONSE TO HABERLER

In *Prosperity and Depression*, Haberler intended to synthesize existing theory. Partly underlying this work of synthesis was an intention to demonstrate that Keynes was not as original as his supporters claimed, and there was thus an implicit polemic, which the Keynesians recognized. The Keynesians recognized this, and Richard Kahn complained in an *Economic Journal* review (1937, p. 677) of Haberler's "basic ideology", while Haberler's best Cambridge contact was Dennis Robertson, who described himself as a "black sheep" in Cambridge because of his skepticism about the multiplier.[18] On the other hand, there was quite widespread recognition of the attraction of such a synthesis. Arthur Burns responded to the 1934 paper with a "wish to congratulate you upon your success in showing that the differences among the various theories are far less important than is commonly assumed."[19] The emerging Keynesian Roy Harrod spoke of the "idea of arbitration" and "conciliation" and added: "I myself have often advocated that something of this sort should be done in cases of disputes among economists."[20]

Partly, also, Haberler was instructed by the League's Economic and Financial Organisation, and its influential director Alexander Loveday, to avoid polemics. When in 1939 Haberler revised Chapter 8 in an anti-Keynesian sense, Loveday rebuked him: "You give the impression of a valiant and war-scarred chieftain, gathering around him his plaid and his followers in order to make one fierce and final attack upon his adversaries. This, I think, can be successful as a diplomatic form of procedure on the assumption that the adversaries are in fact decimated to a man. But, alas, whatever the prospects of decimation may be, this is not a procedure that the League as a publisher can possibly contemplate. We cannot enter into professorial politics."[21] In fact the whole League project involved getting as many prominent economists as possible to argue and comment on each other's work, and to produce what might be thought of as a new consensus.

It is striking how little commentary the international sections of the book occasioned in the mid-1930s: again all the discussion focused on the Keynesian discussion, and on Haberler's use of time periods, and on whether

Haberler was too Austrian (Einaudi wrote "Money seems to be the moving deity. And so it is to a certain point.").[22]

Haberler continued to be central to a new League project, which fundamentally developed the study of *Prosperity and Depression*, which was adopted by the Council of the League in January 1938, "to conduct an enquiry into measures that might be deployed with a view to the prevention or mitigation of economic depressions."

This new project not only drew in the views of economists; every finance ministry and central bank in the member countries of the League were invited to make a statement. Commenting on the replies to this invitation, the League's Economic and Financial Organisation concluded, "the most remarkable feature common to practically all Government replies is the absence of definite statements regarding the adoption of exchange depreciation as a deliberate measure of monetary policy." The only exception was Chile, whose central bank provided a quite definite statement:

> A policy which has as its conscious aim not only the maintenance of relative stability in the purchasing power of the currency, but also greater stability in the development of economic activity in general, can only achieve that aim provided that the maintenance of a legally stable monetary parity is ruled out *a priori*, and provided that the Government is authorized to modify the parity as the circumstances of a given situation may advise of dictate.[23]

This Chilean view was discarded as being eccentric, however; and in response to the big politically driven hot money movements of 1936-8 a new academic view was gradually formed, which Dennis Robertson summed up as "the deadliness of the weapon of competitive devaluation."[24]

The project on prevention and mitigation of crises continued during the War, when the League's Economic and Financial Organisation moved to Princeton. Haberler, who had long before moved to the United States (to a professorship in Harvard), worked during the War at the NBER. He continued to work with the project, and also quite closely followed a project conducted under the auspices of the League on lessons to be derived from interwar currency movements. The chief author for this project (originally entitled "The total volume of international currency") was Ragnar Nurkse, and Haberler maintained a regular correspondence with him, urging particular points (such as the correct view that the British pound was *not* over-valued between 1925 and 1931, a view ignored by Nurkse in the final publication).[25] In general, Haberler was extremely supportive, and at the end of December 1943 wrote on reading the introductory first chapter:

> It seems to me an excellent piece of work and I have literally no comments. I am sure that the volume will arouse much interest and you

> should make sure that a bound edition will be available not only a brochure. Bound books sell much better than brochures.[26]

But there was a substantial pressure on Nurkse to distance himself from the Haberler stance, and to come down very emphatically on the side of a fixed exchange rate regime as an answer to the ills of competitive devaluation. That pressure came above all from a young Dutch economist, who had worked with the League in Geneva, and was now part of the Dutch government in exile (in the Economic, Financial and Shipping Mission of the Netherlands, in Washington D.C.), J.J. Polak. Polak wrote to Nurkse emphasizing his criticism of the exchange rate section of the draft:

> That is that it is taking rather a wavering attitude with regard to the desirability of exchange rate depreciation. I must say that I am personally rather in sympathy with this uncertain attitude; it reflects in fact the uncertainty of economic theory concerning this issue. However, for the benefit of the reader you might consider to tip the scales further against depreciation, provided 1) adequate measures are taken to prevent depressions and 2) there is an international mechanism to provide foreign exchange when required. The latter provision would take care of the balance of payments difficulties which depreciation is supposed to remedy. [This mechanism would be the IMF.] With respect to the stimulation of employment, you might again insist upon investment policies rather than depreciation.

This is a remarkable argument (or non-argument) in the way that it admits the "uncertainty" of economic theory on the exchange rate issue, but suggests that the "reader" would somehow benefit from a clearer stance against exchange rate movements. Indeed the influence of Haberler was to be excised: "Page 17, second paragraph, I would omit the six lines referring to Haberler, since they are a) not relevant and b) not true (at least this is my strong suspicion)."[27]

Polak reverted to this theme in subsequent correspondence with Nurkse. In dealing with balance of payments adjustment, he said, "You know the objections I feel against Haberer's [sic] treatment in 'Prosperity and Depression' and I think it would be a pity if the League would produce again a survey of this theoretical point which was long enough to pretend to be a standard treatment and which would yet not cover questions adequately."[28] Fortified in this way, Nurkse proceeded to give an authoritative and scintillating account of the speculative ills associated with exchange rate movements.

5. CONCLUSION: HABERLER A BELATED ADVOCATE OF FLOATING

Two decades after *The Theory of International Trade* and *Prosperity and Depression*, Haberler came out as a strong advocate for floating exchange rates and he reversed a number of the positions he had taken in the 1930s and 1940s.[29] In *Currency Convertibility* (1954), Haberler makes the case that the European countries should remove their exchange controls and restore current account convertibility but not to the adjustable peg of the Bretton Woods Articles. Instead they should adopt floating rates as had been done by Canada in 1950. The case that he makes against the adjustable peg is very similar to that of Milton Friedman (1953):

> The system of the "adjustable peg' under which there are occasional sharp adjustments in the exchange rate of a currency while rates are rigidly pegged at a constant level during the intervening period... has worked in an unsatisfactory and in fact unstabilizing fashion. (24)

Like Friedman, Haberler criticizes the adjustable peg because the concept of 'fundamental disequilibrium'- the criterion governing an adjustment in parity, is imprecise and monetary authorities "to avoid the embarassment of having to repeat the operation will tend to devalue too much rather than too little. Therefore the method of the 'adjustable peg' does not provide the necessary flexibility" (24); it is highly vulnerable to speculative attack because speculators can only win with a one way bet against the peg; that "it puts responsible people in a morally dubious position. Up to the last moment before they carry out their decision to depreciate they have to protest solemnly that they have no such intention..." (25) As prime examples of the flaws in the Bretton Woods system, he cites the British crises of 1947 and 1949.

> When a currency is under pressure, as Sterling was in 1949, the country loses gold and dollar reserves and more and more people expect a depreciation. If the currency is pegged, the risk of speculation against it is almost entirely removed, because the speculator can be virtually certain that the value of the currency will not go up. If Great Britain had possessed a floating exchange, the dollar price of Sterling would have drifted down earlier. There would also have been some speculation against Sterling. But soon a point would have been reached where some speculators would begin to expect recovery. (25)[30]

Moreover as a contrast to the 1947 and 1949 experiences and in a partial reversal of his position in 1936, he praises the British float after 1931 as "another highly successful experiment in freely floating exchange rates," and in another reversal of his earlier views, he states that " persistent and massive

speculation against a currency "capital flight" is invariably the consequences of inflation, policies, political instability or the threat of war" and *not* the consequence of floating [our emphasis] (24).

Finally, like Friedman, Haberler argues that in normal cases, floating would involve few changes in exchange rates and that "the inconvenience of fluctuating rates can be substantially reduced by permitting and organizing well functioning forward markets in foreign exchange" (26)

Two decades later, Haberler revisited the scene of the crime-the interwar period. In "The World Economy, Money and the Great Depression" (1976), Haberler clearly states that floating rates were not to blame for the instability of that era. He is highly critical of the Nurkse view that intertwined floating exchange rates with competitive devaluations as important causes of world depression.

> There has been general agreement that competitive depreciation of currencies greatly contributed to the world depression. This agreement found its expression in the Articles of Agreement of the International Monetary Fund...But the IMF charter does not define the term. It is indeed an imprecise term and there has been much confusion about its meaning and causes. Competitive depreciation has been and often still is attributed to floating...Some regard the mere existence of exchange-rate changes in the 1930s as evidence of competitive depreciation. This completely confuses the problem. Not every devaluation was of a competitive kind. A devaluation which merely restores equilibrium or "clean" "unmanaged floats...has nothing to do with competitive devaluation" (385). Indeed the deflation and devolution of trade in the 1930's reflected the perverse operation of "an adjustable peg with excessive rigidity." (387)

Haberler describes the events of the 1930's as follows:

> The depreciation of the pound came in 1931, of the dollar in 1933-34, of the gold bloc currencies in 1936...In between the big changes, there was some movement of exchange rates, but very little free floating. Most of the devaluations were forced by acute balance of payments pressures intensified by massive speculation and could be justified as necessary conditions for domestic expansion and relaxation of import restrictions. But each of these devaluations put deflationary pressure on all the other countries that maintained their gold parities, pushing them deeper into depression, import restrictions, and exchange control. This vicious sequence, [which] became known as "competitive depreciation"... was attributed to floating, but in reality it was the consequence of overly rigid exchange rates – in other words, of the refusal to make adjustments until the situation became critical. (375)

Thus "the major misinterpretation of the lessons was blaming the competitive depreciations of the 1930's on flexible exchange rates rather than an excessive rigidity of those rates and on the defects of the method of the adjustable peg. As a consequence floating was ruled out." (390)

Haberler (1976) largely attributes the Great Depression to monetary forces and specifically, following Friedman and Schwartz (1963) to the monetary collapse in the United States. "...there can be no doubt that the collapse of the banking system, the bankruptcy of many thousand banks, and the inept and overly timid monetary policies which permitted the money stock to shrink by about one-third was to a large extent responsible for the disaster" (384) The monetary collapse in the US. was then transmitted via the fixed exchange rate gold standard to the rest of the world.

> The overwhelming importance of the monetary factor is underlined by the fact that countries that applied expansionary measures under the cover of open or disguised devaluation or of floating managed to extricate themselves from the maelstrom of deflation one or two years ahead of the United States (385).[31]

Haberler is critical of the Nurkse view, which he had also endorsed earlier,[32] that the international depression could have been avoided "if the leading industrial nations had initiated...a simultaneous policy of monetary expansion, in say, the spring of 1931..." (Nurkse, 1944, 130). According to Haberler "the conditions needed for there to be sufficient policy coordination to obviate exchange rate changes are very exacting–so exacting indeed that they are unlikely to be generally fulfilled between sovereign countries." Haberler (1976)'s preferred solution is exactly the one implied by Haberler's 1937 discussion (441-451) that the spread of the Great Depression could have been avoided by floating rates.

> Given the American depression and given the impossibility of an across the board change in gold parities, the best method of currency realignment would have been extensive floating. If in September 1931 Germany and the gold bloc countries, following the British example, had depreciated their currencies against the dollar and started expansionary policies, they all could have cut short the deflationary spiral in their countries, just as the devaluation of the pound cut short the deflationary spiral for the sterling bloc. This would have course intensified the US depression, but it might have induced the United States to take expansionary measures (377).[33]

Thus it took Haberler 40 years to fully make the case for floating exchange rates as the cure for the "bacillus" of the international spread of depressions, that his analysis in *Prosperity and Depression* suggested. Had he followed through at the time one wonders if the international monetary

system would have evolved differently? Given the opposition to his analysis by most contemporaries it seems doubtful.

ENDNOTES

[1] Friedman's "The Case for Flexible Exchange Rates" first appeared in a memorandum written in Paris in 1950. Others also advocated floating in this period, e.g. Emminger, Sohmen and British officials in the ROBOT plan. Canada's successful shift to floating in 1950 became a focal point for their view.

[2] See Bordo (1993), pp. 30–31.

[3] LoN R4459, Stoppani, "Note Regarding the Possibilities of International Action in Economic Matters."

[4] Machlup (1932), p. 527.

[5] LoN R4453, June 30, 1938, Minutes of Delegation on Economic Depressions.

[6] See Chipman (1987) and Ebeling (2000).

[7] He is credited with first discussing the real balance effect in the 1941 edition of *Prosperity and Depression* as a way to avoid price level indeterminancy in the Keynesian model.

[8] According to Chipman (1987, p. 581) "his most significant contribution was his reformulation of the theory of comparative costs which revolutionized the theory of trade."

[9] League of Nations archive, Geneva, R4539, Haberler, Systematic Analysis of the Theories of Business Cycles (August 1934, Economic Intelligence Service), p. 3.

[10] LoN R4539, Jan. 5, 1935, Alec. Macfie to Haberler.

[11] LoN R4539, Feb. 10, 1936, Loveday note.

[12] Also see Willett(1982) who covers some of the same ground.

[13] His analysis is close to the recent literature that views the classical gold standard as a form of credible target zone. See Hallwood, Marsh and MacDonald (1996) and Bordo and MacDonald (1997).

[14] In Haberler (1949) a strong case is made against" elasticity pessimism."

[15] The negative spillover effect is smaller the larger the domestic economy.

[16] This spillover effect diminishes the larger is the size of the domestic economy.

[17] See Bordo and Schwartz (1990).

[18] LoN R4539, April 16, 1936 Robertson to Keynes.

[19] LoN R4539, Dec. 27, 1934 Arthur F. Burns to Haberler.

[20] LoN R4539, Nov. 5, 1934 Harrod to Haberler.

[21] LoN R4540, Feb. 10, 1939, Loveday to Haberler.

[22] LoN R4539, Jan. 28, 1935, Einaudi to Haberler.

[23] LoN D.D.E., Sept. 5, 1938, statement of central bank of Chile; Nov. 11, 1938, Summary of Government Replies.

[24] LoN May 30, 1938 Robertson: Note on Measures to Promote Recovery from Depression.

[25] LoN C1738, Oct. 11, 1943, Haberler to Nurkse.

[26] LoN C1738, Dec. 21, 1943, Haberker to Nurkse.

[27] LoN C1738, Aug. 25, 1943, Polak to Nurkse.

[28] LoN C1738, April 13, 1944, Polak to Nurkse.

[29] In the late 1960s, Haberler headed a committee to advise the incoming Republican administration on international monetary issues, and at this time pushed the case for floating.

[30] This of course echoes the controversial ROBOT plan circulated in 1952 inside the British government, urging the authorities to float the pound, make it convertible into gold and dollars, and fund the sterling balances (see Cairncross 1985, ch. 9).

[31] For evidence see Bernanke and James (1991).

[32] And the view of Eichengreen (1992).

[33] Haberler (1976) footnote 29 also argued that the US could have taken the required expansionary monetary policy to offset the deflation without being hampered by a balance of payments constraint. For recent supporting evidence see Bordo, Choudhri and Schwartz (1999) and Hsieh and Romer (2001).

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Discussion

Michael D. Bordo and Harold James's

THE ADAM KLUG MEMORIAL LECTURE:

HABERLER VERSUS NURKSE: THE CASE FOR FLOATING EXCHANGE RATES AS AN ALTERNATIVE TO BRETTON WOODS?

by Peter B. Kenen
Princeton University

It is a privilege and pleasure for me to participate in this session. As Director of the International Finance Section at Princeton, I helped to arrange Adam Klug's visit to Princeton and the publication of his monograph *The German Buybacks, 1932-1939: A Cure for Overhang?* During his stay at Princeton, moreover, we had long conversations about his work, and I came to admire his devotion to scholarship, the tenacity with which he tracked down the data needed, and the care with which he used it.

I have also to thank the organizers of this conference for inviting me to comment on the paper by Bordo and James, because of my great fondness for the two scholars whose work they review. Gottfried Haberler was my teacher at Harvard and supervised by doctoral dissertation. In my first years of teaching at Columbia, moreover, when I was converting my dissertation into a book, Ragnar Nurkse found time to read the manuscript and made many helpful comments.

The Bordo-James paper asks why Nurkse's views had a great deal of influence on the design of the Bretton Woods system, but Haberler's view did not. The paper regards this as being unfortunate because, it says, Nurkse was wrong and Haberler was right. It is important, however, to distinguish clearly between Nurkse's own influence on the design of the postwar monetary system and the influence of the views contained in *International Currency Experience*. It is also important to distinguish between Haberler's contribution to exchange-rate theory in *Prosperity and Depression* and the

general case for exchange-rate flexibility, which he did not espouse until the mid-1950s.

At the start of their paper, Bordo and James promise to conclude with some reflections on the role of economic ideas in influencing the design of international monetary regime. In place of the promised reflections, however, they offer us two short statements – that the debate around Haberler and Nurkse has made clear that economists can influence institutional design, and that Haberler had been part of the discussion which would after 1973 quickly make the floating rate system acceptable. I am quite willing to pocket these statements as a down-payment on their promise but not to regard them as payment in full. I am, in fact, skeptical of the first assertion, because the time line does not support it. Nurkse's book was not published soon enough to have a great deal of influence.

Although Bordo and James are quite right to note that economists working for the League of Nations had sought for several years to rethink the framework of international and trade relations and had arrived at the Astance which also underlay the Bretton Woods agreements, they offer no convincing evidence that those economists' work affected the thinking of those who produced the actual framework for those agreements. They note that a draft of Nurkse's book was circulated to delegations attending the meeting in Atlantic City that prepared the agenda for the Bretton Woods Conference, but they give us no reason to believe that the Atlantic City meeting had any appreciate impact on the outcome at Bretton Woods or that it made any significant change in the plan for the postwar monetary system developed by Harry Dexter White and John Maynard Keynes in the previous bilateral meetings between US and UK officials.

Whenever I have occasion to cite Nurkse's book, I describe it as the best single representation of views that were widely held at the time concerning the interwar period – views that do help to explain the outcome of the wartime negotiations that produced the Bretton Woods system. At one point, moreover, Bordo and James make a similar statement. They describe Nurkse's book as a distillation of lessons from the interwar experience that expressed ... the philosophy underlying the Bretton Woods solution, and they say that Nurkse's viewpoint was the same as that of White and Keynes. But the title, form, and language of their paper overwhelm that observation. They give the impression that Nurkse's work, in and of itself, affected the outcome at Bretton Woods. And they reinforce that impression when they conclude that the views of economists can influence institutional design.

I have a similar reservation about the second bit of the down-payment that Bordo and James have made–the suggestion that academic advocates of flexible exchange rates paved the way for acceptance of flexible rates after 1973. They rightly note that some of those advocates, including Haberler, influenced the policies of the Nixon Administration. It should be

remembered, however, that the major industrial countries backed their way into floating rates after the collapse of the Smithsonian Agreement. They did not embrace floating rates as the first-best regime until it was glaring clear that a return to pegged rates would be impossible under conditions prevailing after the first oil crisis.[1]

My comments thus far lead me to suggest that Bordo and James have posed the wrong question. There is no cause to ask why Nurkse's views prevailed over Haberler's views, because the views that truly prevailed and led to the creation of the Bretton Woods system were not Nurkse's views alone. They came close to being the consensus view and were shared by the officials responsible for the design of the postwar system. But let us go along with Bordo and James by supposing that Nurkse's book directly affected the design of the postwar system and ask why Haberler's views did not attract more support.

Bordo and James are right to remark on a difference between the two men. Both were rather reticent; you would not have chosen either one to plead your case orally before a court. One of Nurkse's colleagues once said of him that nobody else at the League could be silent in so many languages.[2] Yet Nurkse's book is assertive. It is, from beginning to end, an indictment of policies in the interwar period and of the international regime – or lack of one – that spawned those policies. And though the book is less Keynesian than Bordo and James imply, it does reflect the Keynesian view that right-thinking policy makers can improve on market outcomes. In some of his later work, Haberler took strong positions. In *Prosperity and Depression*, however, he is much more analyst than advocate. As Bordo and James remind us, moreover, his case for flexible exchange rates appears in a rather abstract, taxonomic chapter on the international transmission of shocks. Most important for our purpose, his principal argument in favor of floating rates – that they can afford insulation from imported shocks – assumes that there is no capital mobility.[3] Anyone reading Haberler's case for flexible rates in, say, 1937, would have been right to ask whether it had any relevance to the world with which the reader was familiar – one in which capital movements had been very prominent.

Having stressed the importance of capital mobility – or, more precisely, its absence – for the validity of Haberler's argument, let me also draw attention to a paradox. The strength of the present-day case for flexible exchange rates does not derive from the point made by Haberler, that flexible rates can confer insulation from imported shocks when there is no capital mobility. It derives from the cost of defending fixed rates when capital mobility is high. Flexible rates are volatile, and their behavior is not always benign. Consider the size of the swings in the value of the dollar since 1980. But contemplate the cost of preventing those swings by adjusting US monetary policy. Fixed

rates, moreover, are crisis prone under conditions of high capital mobility. We have therefore to live with exchange-rate flexibility whether or not we believe that it is, in principle, the optimal regime.

Let me conclude by posing a question on which Bordo and James could write a fascinating paper. What would have happened in the postwar period if Haberler's views had prevailed? Suppose that the Bretton Woods Conference had adjourned after adopting a one-sentence resolution: Let exchange rates float on the first day following the end of World War II. By how much would the dollar have appreciated vis-à-vis the pound, french franc, and other European currencies during the years of the so-called dollar shortage? Would there have been more or less inflation? Would there have been faster or slower recovery in the war-town countries? Would governments have liberalized capital flows faster or more slowly? I don't know the answers, but I am inclined to believe that the Bretton Woods regime served us fairly well during the postwar transition and that it was abandoned at the right time – give or take a few years.

ENDNOTES

[1] Let me add a footnote to a footnote in the paper, where Bordo and James bracket the names of Otmar Emminger and Egon Sohmen, suggesting that Emminger was a closet floater, even though he loyally defended the Bretton Woods regime in the 1960s. Had Emminger been sympathetic to floating, he should have been willing to let other advocates of floating, such as Sohmen, make the case for floating, even if he was not free to endorse their views. But Emminger did not do that. In fact, he succeeded in excluding Egon Sohmen from an off-the-record meeting of officials and academics that was convened to discuss reform of the Bretton Woods system.

[2] Quoted by Gottfried Haberler in his introduction to *Equilibrium and Growth in the World Economy*: Economic Essays by Ragnar Nurkse, Gottfried Haberler and Robert E. Stern, eds. Cambridge: Harvard University Press, 1961.

[3] Later on, Bordo and James point out that capital was not perfectly mobile in the 1930s, and they go on to suggest that floating would have worked, at least in part, as Haberler first intended. But partial insulation might not have enough to prevent the shocks and policy errors of the 1930s from having global consequences. At times, moreover, Bordo and James, as well as Haberler, appear to attribute the insulation afforded by floating rates to the absence of gold or other reserve flows, and that is not quite right. Recall that insulation does not occur whenever there is any capital mobility, even if the exchange rate is perfectly flexible (i.e., there are no reserve flows).

Part II

Present

The State of the Models

Chapter 7

OPTIMUM CURRENCY AREAS AND KEY CURRENCIES

Ronald McKinnon [1]
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1. INTRODUCTION

Forty years after Robert Mundell put forth his celebrated theory of optimum currency areas, the analytical consensus based on his celebrated 1961 paper has disintegrated. Part of the problem stems from a seeming contradiction in Robert Mundell's own work. For offsetting asymmetrical macroeconomic shocks, his 1961 article leans toward making currency areas smaller and more homogeneous rather than larger and more heterogeneous. However, in a little-known article published in 1973, "Uncommon Arguments for Common Currencies", Mundell argued that asset holding for international risk sharing is better served by a common currency spanning a wide area–within which countries or regions could be, and perhaps best be, quite different.

After reviewing both approaches, I will focus on extending Mundell's argument for international risk sharing against supply-side shocks–shocks to productivity, to the international terms of trade, and so on. For specific classes of financial assets–money, bonds, and equities–I examine how the nature of the exchange rate regime, and associated currency risk, affect ex ante the incentives for international portfolio diversification.

Across nations or regions, my discussion of OCA theory will proceed on at least four levels:

(1) The long-standing debate on the optimum domain of fixed exchange rates in comparison to keeping them flexible when all currencies are treated symmetrically.

(2) The asymmetrical role of a key currency in securing exchange rate stability within an optimum currency area.
(3) The subordinate debate on whether one needs complete monetary union (as in continental Europe) to secure an optimum currency area's internal domain.
(4) Even more subordinate is the important issue of whether a group of economies with close trade ties (as in East Asia) gain by collectively pegging to an outside currency such as the US dollar.

To encompass all four levels of analysis, a general algebraic model is devoutly to be wished. For a noble attempt to provide one, see Ching and Devereux [2000a and 2000b]. Short of this, my paper addresses issues on each level–and provides a taxonomic analytical framework to show how they are inter-related. But first, let us re-examine the two Mundell models.

2. THE EARLIER MUNDELL WITH STATIONARY EXPECTATIONS

Like most macroeconomists in the postwar period who had a Keynesian mind set, Mundell in 1961 believed that national monetary and fiscal policies could successfully manipulate aggregate demand to offset private sector shocks on the supply or demand sides–what Willem Buiter [1999, p. 49] called the "fine tuning fallacy." Underpinning this belief was the assumption of stationary expectations. As a modeling strategy, he assumed that people behaved as if the current domestic price level, interest rate, and exchange rate (even when the exchange rate was floating) would hold indefinitely. Not only in his theory of optimum currency areas but in the standard textbook Mundell-Fleming model [Mundell 1963], stationary expectations underlay how monetary and fiscal policy work themselves out in an open economy. In several of his influential essays collected up to 1968, Mundell showed how the principle of effective market classification could optimally assign monetary, fiscal, or exchange rate instruments to maintain full employment while balancing international payments. He presumed that agents in the private sector did not try to anticipate future movements in the price level, interest rates, the exchange rate, or in government policy itself.

In addition to stationary expectations, Mundell [1961] posited that labor mobility was restricted to fairly small national, or even regional, domains. And these smallish domains could well experience macroeconomic shocks differentially–"asymmetrically" in the jargon of the current literature–from their neighbors. In these special circumstances, Mundell illustrated the advantages of exchange rate flexibility in what has now become the standard textbook paradigm:

> Consider a simple model of two entities (regions or countries), initially in full employment and balance of payments equilibrium, and see what happens when the equilibrium is disturbed by a shift in demand from the goods in entity B to the goods in entity A. Assume that money wages and prices cannot be reduced in the short run without causing unemployment, and that monetary authorities act to prevent inflation...
>
> The existence of more than one (optimum) currency area in the world implies variable exchange rates... . If demand shifts from the products of country B to the products of country A, a depreciation by country B or an appreciation by country A would correct the external imbalance and also relieve unemployment in country B and restrain inflation in country A. This is the most favorable case for flexible exchange rates based on national currencies. [Robert Mundell, 1961. pp. 510-11]

True, Mundell carefully hedged his argument by giving examples of countries that were not optimum currency areas–as when the main shocks in the terms of trade occurred across regions within a single country–rather than between countries. And he also worried about monetary "balkanization" into numerous small currency domains which might destroy the liquidity properties of the monies involved. Nevertheless, the economics profession enthusiastically embraced the above delightfully simple paradigm, often without Mundell's own caveats. Textbooks took existing nation-states as natural currency areas, and argued that a one-size-fits-all monetary policy across nation states cannot be optimal when (1) labor markets are somewhat segmented internationally, and (2) when the composition of output varies from one country to the next, leading countries to experience terms-of-trade shocks differentially.

Following Mundell, McKinnon [1963] hypothesized that "openness" with potential currency-area trading partners would militate toward having a fixed exchange rate between them. He argued that the more open the economy, the less tenable would be the Keynesian assumption of sticky domestic prices *and* wages in response to exchange rate fluctuations. For a small open economy, he also worried that the liquidity value of the domestic money would be impaired if its exchange rate, and thus its purchasing power over a broad basket of world goods, fluctuated. He *should* also have made the case that the more open economies are to each other, the less asynchronous would be their output fluctuations arising from demand shocks – a case made empirically, and very neatly, in a recent article by Frankel and Rose [1998].

Also operating within Mundell's 1961 framework, Peter Kenen [1969] looked at the conditions under which asynchronous macroeconomic shocks across countries would become less likely. If output were more diversified, Kenen concluded that the country in question would be a better candidate to

have fixed exchange rates with its neighbors because shocks focused on this or that industry would offset each other in the aggregate–the law of large numbers. His concluded that

> The principal developed countries should perhaps adhere to the Bretton Woods regime, rarely resorting to changes in exchange rates. The less developed countries, being less diversified and less well equipped with policy instruments, should make more frequent changes or perhaps resort to full flexibility. [Kenen, 1969, p. 4]

Kenen's conclusion, that relatively undiversified less developed countries – often with just one or two dominant export products – should retain exchange flexibility, is consistent with the earlier Keynesian Mundell, who stressed asymmetric shocks in the face of internal price and wage rigidities. However, as we shall see, Kenen's conclusion is quite inconsistent with the later "forward-looking" Mundell [1973a] who emphasized the need to promote asset diversification for international risk sharing.

In the 1960s, Mundell – and almost all other economists – presumed that a flexible exchange rate would be a smoothly adjusting variable for stabilizing the domestic economy. At the time, this presumption was also shared by monetarists, such as Milton Friedman [1953] or Harry Johnson [1972], who were not macro fine tuners but who wanted domestic monetary independence in order to better secure the domestic price level. Whatever policy a central bank chose, they believed a flexible exchange rate would depreciate smoothly if the bank pursued easy money, and appreciate smoothly if the bank pursued tight money. (Because economists had very little experience – except for Canada – with floating exchange rates in the 1950s and 1960s, the great volatility in generally floating exchange rates after 1971 was unanticipated.)

Thus, in the 1960s, Mundell's "Optimum Currency Areas" appealed both to Monetarists and Keynesians, although for somewhat different reasons. As such, it became enormously influential as the analytical basis for much of open-economy macroeconomics, and for scholarly doubts as to whether Western Europe – with its diverse national economies and relatively immobile labor forces – was ready for a one-size-fits-all monetary policy.

In the 1990s, the outstanding scholarly skeptic of European Monetary Union (EMU) was Barry Eichengreen – whose many articles (with several co-authors) were consolidated in his book *European Monetary Unification* [1997]. He acknowledged Mundell's influence thus:

> The theory of optimum currency areas, initiated by Robert Mundell (1961), is the organizing framework for the analysis. In Mundell's paradigm, policymakers balance the saving in transactions costs from the creation of a single money against the consequences of diminished policy autonomy. The diminution of autonomy follows from the loss of the

> exchange rate and of an independent monetary policy as instruments of adjustment. That loss will be more costly when macroeconomic shocks are more "asymmetric" (for present purposes, more region- or country-specific), when monetary policy is a more powerful instrument for offsetting them, and when other adjustment mechanisms like relative wages and labor mobility are less effective. [Eichengreen, 1997, pp. 1-2].

Eichengreen and Bayoumi [1993] had used an elaborate econometric analysis to show this asymmetry. "A strong distinction emerges between the supply shocks affecting the countries at the center of the European Community – Germany, France, the Netherlands, and Denmark – and the very different supply shocks affecting other EC members – the United Kingdom, Italy, Spain, Portugal, Ireland and Greece" (page 104, as reprinted in Eichengreen, op cit.). Even today, the British press and many economists still argue that a one-size-fits-all monetary policy run from Frankfurt can't be optimal for both continental Europe and Britain. After all, aren't business cycle conditions in Britain sufficiently different to warrant a separate countercyclical response from an independent Bank of England? But whether sophisticated or not, writers in this vein – more recently Martin Feldstein [2000] in "Europe Can't Handle the Euro" – are definitely in thrall to the earlier Mundell.

3. THE LATER MUNDELL AND INTERNATIONAL RISK SHARING

In a not-much-later incarnation, Robert Mundell [1973a] jettisoned his earlier presumption of stationary expectations to focus on how future exchange rate uncertainty could disrupt the capital market by inhibiting international portfolio diversification and risk sharing. At a 1970 conference in Madrid on optimum currency areas, he presented two prescient papers on the advantages of common currencies. Perhaps in part because the conference proceedings were not published until 1973, these papers have been overshadowed by his 1960s masterpieces.

The first of these later papers, "Uncommon Arguments for Common Currencies," is of great intrinsic interest because very early it emphasized the forward-looking nature of the foreign exchange market–which was then worked out in more analytical detail by his students: see, for example, Frenkel and Mussa [1980]. As such, it counters the earlier Mundell idea that asymmetric shocks–i.e., those where an unexpected disturbance to national output affects one country differently from another–undermine the case for a common currency.

Instead, Mundell [1973a] showed how having a common currency across countries can mitigate such shocks by better reserve pooling and portfolio diversification. Under a common currency, a country suffering an adverse shock can better share the loss with a trading partner because both countries hold claims on each other's output. Whereas, under a flexible exchange rate without such portfolio diversification, a country facing an adverse shock and devaluing finds that its domestic-currency assets buy less on world markets. The cost of the shock is now more bottled up in the country where the shock originated. As the later Mundell puts it.

> A harvest failure, strikes, or war, in one of the countries causes a loss of real income, but the use of a common currency (or foreign exchange reserves) allows the country to run down its currency holdings and cushion the impact of the loss, drawing on the resources of the other country until the cost of the adjustment has been efficiently spread over the future. If, on the other hand, the two countries use separate monies with flexible exchange rates, the whole loss has to be borne alone; the common currency cannot serve as a shock absorber for the nation as a whole except insofar as the dumping of inconvertible currencies on foreign markets attracts a speculative capital inflow in favor of the depreciating currency. [Mundell, 1973a, p.115].

Mundell's second Madrid paper, "A Plan for a European Currency" [1973b], makes clear his early enthusiasm for the great European experiment. With the formal advent of the Euro on January 1, 1999, the forward-looking Mundell of the Madrid papers "triumphed" over his earlier Keynesian incarnation as the originator of the theory of optimum currency areas. But he is intellectual father to both sides of the debate.

4. UPDATING MUNDELL'S RISK-SHARING ARGUMENT: AN AXIOMATIC APPROACH

In developing his formal model of risk sharing, Mundell [1973a] made no distinction among money, bonds, or equities. Indeed, his analysis proceeded as if the only financial asset was some form of money. And, he considered risks arising only on the supply side, i.e., where supply shocks affected national outputs differentially. In this context, the above risk-sharing argument is deceptively simple. However, as we shall see, if money is the only financial asset, i.e., no bonds or stocks, then risk sharing between two countries will still be incomplete–even when they are joined together by a common currency.

First, however, let us ask whether "full" international risk sharing from differential supply shocks–across regions or countries–is ever possible.

Purely theoretically, one could imagine an Arrow-Debreu economy with a complete set of cross-country contingent claims, i.e., insurance contracts all specified in real terms. If country A experienced a shortfall in output from some specified natural disaster, then it would be compensated by country B–and vice versa. Similarly, if output increased fortuitously in country A, a contract would exist requiring its surplus to be shared with country B.

However, an Arrow-Debreu economy can't actually exist. Besides being inhibited by overwhelming complexity in writing such contingent contracts, any contracts actually negotiated would be fraught with moral hazard. In Arrow-Debreu insurance contracts, the precise meaning of every state of nature requiring a particular payoff would have to be prespecified. Otherwise, countries (the people in them) would slacken their work effort, reduce output, and try to exercise some (false) insurance claim on a neighbor.

Be that as it may, suppose these problems of complexity and moral hazard in writing such forward contracts could be overcome. That is, a full set of such state-contingent claims on real resources was actually negotiable both within the domestic economy and for trade with neighboring countries. Then money itself would become redundant! There would be no point in carrying cash reserves forward, whether in domestic or foreign currency. Nominal exchange rate arrangements, whether fixed or floating, wouldn't matter. In this complete Arrow-Debreu model, all current and future "real" resources would have been fully bartered in the first negotiating period.

Instead, the nature of financial assets available for sharing risk among nations needs to be carefully restricted. To maintain empirical relevance, let me propose the following set of three restrictive axioms that every model should satisfy.

(1) *No claims contingent on states of nature*: Although private insurance markets exist at the microeconomic level, individual risks can largely be diversified away. Not so at the macroeconomic level when large supply shocks affect nations differentially.

(2) *All financial assets are nominal*: That is, their only intrinsic value is monetary. There are no "real" (or indexed) bonds, national or international.

(3) *Stable fiat money*: Monetary authorities strive–perhaps imperfectly–to stabilize the purchasing power of each domestic money in terms of a broad basket of consumable goods and services. In undiversified economies with just one or two major outputs, the authorities would look to a broad basket of importables as their price-level target.

These axioms are symbiotically related. As per Arrow and Debreu, stable money isn't necessary if there are "real" bonds or a complete set of contingent claims on real output. We know, however, that in practice virtually no state-contingent bonds are actually issued, and that there are no private issues of indexed "real" bonds.

In contrast, broad markets for *non-contingent* nominal bonds, those whose payoffs are fixed in monetary terms without regard to states of nature, exist on a large scale–but only because buyers and sellers believe that the national monetary authority is committed to stable money. A holder of a fixed-interest nominal bond needs to be reassured ex ante that the bond's purchasing power at face value is known–at least approximately. Otherwise, broad and deep long-term bond markets can't exist.

Finally, theoretical models of open economies with just one, two, or even three goods naturally violate the stable money axiom. In such models, the domestic-currency prices of these few goods–often just one domestic good–vary substantially in response to some supply shock or exchange rate change. But that is inconsistent with having a determinate demand for each domestic money. People will only hold money if there exists a broad diversity of goods produced at home or abroad whose average price defines money's purchasing power. (Obviously, I am ruling out highly inflationary economies as candidates for joining any kind of cooperative fixed exchange rate regime.) In a literal one-good economy, people would have no incentive to hold money.

Of course, our stable money axiom doesn't rule out the possibility of major changes in the relative domestic prices of particular goods, or in international terms of trade, or (limited) exchange rate flexibility. But large discrete changes, or jumps, in the purchasing power of foreign or domestic money are ruled out.

Under these three restrictive axioms limiting the potential array of financial assets available (in comparison to the unlimited array in an Arrow-Debreu economy), what can be said about the possibilities for international risk sharing against supply side shocks under alternative exchange rate arrangements? To simplify the discussion, consider capital markets as if they contained just one financial asset at a time. I will consider money, bonds, and equities in turn.

5. MONEY AND OFFICIAL EXCHANGE RESERVES

In the face of imperfectly correlated supply shocks, Mundell's original (1973a) theoretical argument–where "money" is the only financial asset–still holds. If two countries share a common currency, Mundell reasoned that the full stock of privately held money in country A could be exercised as a claim on country B's resources should A be hit with a sudden decrease in output–and vice versa. Under flexible exchange rates, however, privately held money in one country would not be an automatic claim on the resources of the other–at least not at par value.

In the absence of a common currency, however, governments could only ensure that the stock of privately held national domestic money would be fully convertible into foreign money at a fixed exchange rate by holding official exchange reserves–possibly on a large scale. Then, issues of national money would be fully backed by foreign-currency assets–as when one of them adopts a currency board.

But even if the domestic stock of narrow money, say M1, is fully backed by foreign exchange, it is simply not "big" enough for substantial international risk sharing. Ching and Devereux (2000a) derive this result more formally in the context of a model where money is the only asset in countries forming a monetary union. But it is intuitively obvious. The amount of narrow money individual firms and households wish to hold as domestic means of payment is small relative to their total stocks of bonds and equities–and even small relative to the economy's total stock of short-term liquidity. In the United States the stock of M1, currency and checking accounts, is less than one fifth of the total stock of private sector liquid assets (M3)–which also includes money market mutual funds, commercial paper, and short-term Treasury securities. And, narrower still, the American monetary base–currency and commercial bank reserves held with the Federal Reserve–is less than one half of M1 or only 5.4 percent of American GNP.

Clearly for financially sophisticated economies, a broader range of financial assets as vehicles for international portfolio diversification needs to be considered.

6. INTERNATIONAL DIVERSIFICATION IN BOND HOLDINGS AND THE PRINCIPAL-AGENT PROBLEM

Let us define fixed-interest "bonds" very broadly to include virtually all financial assets that are neither narrow money (M1) nor equities. Because their payoffs are variable, common stocks might be considered natural financial instruments for international risk sharing–and I shall consider them separately below. Hence, our definition of a bond includes time deposits in banks and commercial bills as well as mortgages and corporate or government bonds.

A key aspect of the bond market is that most of the "bonds" held by households are not primary claims on ultimate borrowers. Instead, most of these claims are indirect claims intermediated through financial institutions–banks, money market funds, pension funds, insurance companies, and so on. And the size of these holdings is extremely large relative to narrow money. Under this broad definition, direct and indirect

bond holdings are about 200 percent of GNP in the United States. Thus, if different regions (nations) suffer from asymmetrical supply shocks to regional outputs, default risk in the bond market is potentially substantial.

In principle, however, much of this default risk can be shared through portfolio diversification across diverse regions. Indeed, in regions with just one or two products, uninhibited portfolio diversification by financial intermediaries representing domestic households would result in most of their bond-type domestic assets being claims on foreigners. But this need not result in a net outflow of capital. Foreigners would happily own most of the domestic bonds issued by any (small) single-product economy as long as the rest of their portfolios were well diversified outside of the economy in question–thus leading to compensating capital inflows. Indeed, the less diversified the local economy is in its output structure, the more it has to gain in risk reduction by being plugged into a broader bond market encompassing economies very different from itself.

However, there is trouble in this potential paradise. Unless these diverse economics units are securely connected by a common money, exchange rate uncertainty–i.e., currency risk–will inhibit the international sharing of default risks.

At first glance, it is not obvious why the presence of currency risk should inhibit international portfolio diversification by households and nonfinancial firms. On the contrary, isn't currency risk just another risk that domestic bondholders could diversify away? Indeed, if the future purchasing powers of various national monies were (symmetrically) uncertain, wouldn't risk-averse households in any one country be given additional incentive (beyond their concern for limiting default risks) to hold bonds denominated in foreign currencies?

But for international or even domestic risk diversification, households could hardly manage their own bond portfolios directly. They would lose all the well-known economies of scale, including expert information collection, associated with risk pooling by financial intermediaries. Thus, a household would prefer to hold general claims with a fixed monetary pay out which are, say, an indirect claim on a bank's loan portfolio. Similarly, households seeking insurance would prefer an annuity fixed in nominal terms rather than directly holding some pro rata share of the insurance company's assets.

Reflecting this strong empirical regularity, let us assume that all the holdings of "bonds" by households are indirect, i.e., general claims on a financial intermediary. Then the resulting *principal-agent problem* becomes the key to understanding why we observe so little international diversification in bond holdings across countries not joined by a common money. The household (the principal) cannot possibly monitor or control the individual investment decisions made by the financial intermediary (the agent). So it buys claims on the financial intermediary–such as a certificate of

deposit–whose face value is fixed in monetary terms. And, in non-inflationary economies where foreign monies do not circulate in parallel with the domestic one, the simplest way of establishing the face value of the pay out, i.e., the intermediary's liability, is to choose the domestic money as the sole numéraire. Thus I hypothesize that *the fixed face value of bonds held by domestic nationals the world over is largely denominated in the local (national) currency.*

But households' demand to have their noncontingent assets fixed in the national currency poses problems for the financial intermediaries, who must eventually make good on these claims. Within the limited domain defined by the domestic currency, risk-averse intermediaries can freely strive to diversify their own asset portfolios to limit default risk. However, if they cross currency boundaries in making loans, they then find themselves in the uncomfortable position of having liabilities with fixed face values denominated in the domestic currency when (some of) their assets are denominated in foreign currencies. Thus, in the foreign exchange markets, if the domestic currency was suddenly to appreciate against all others, such a financial intermediary could easily go bankrupt. Whence various regulatory rules of thumb, especially for banks, that force them to hedge in order to limit the extent of their net foreign exchange exposure. Although short-term foreign exchange risk can be hedged at some cost, long-term holdings of foreign bonds are less amenable to being hedged. A British retirement pension fund with long-term annuity liabilities fixed in sterling would lean strongly to holding fixed-yield sterling assets at a similar long term to maturity.

The bottom line is that the presence of currency risk inhibits international portfolio diversification in bond markets designed to share default risks arising out of asymmetric supply shocks. Insofar as smallish regions are more specialized in what they produce and thus subject to idiosyncratic output shocks, they would suffer more from allowing their exchange rates to float. Under flexible exchange rates, the inability of a small region to diversify away its default risks could lead to a higher risk domestic risk premium in the whole structure of its interest rates.

But much of the literature on optimum currency areas has argued just the opposite. Besides Peter Kenen quoted above, other authors have questioned whether regions or nations that are highly specialized in production should give up control over their own monetary policy and exchange rates. As Jeffrey Frankel (1999) has pointed out, Barry Eichengreen [1992] and Paul Krugman [1993] have gone one step further and worried that even a successful monetary and economic union may become less of an optimum currency area through time as its regions naturally become more specialized in what they produce. Eichengreen and Krugman point out that industrial production is now much more specialized across American states than across

European nation states–and that the latter will become more specialized as a result of the very success of European Economic Union. As reported by Frankel [1999], Eichengreen and Krugman are essentially claiming that an economic entity might fail the criteria to be an OCA ex post, even if they had passed ex ante. Indeed, Krugman suggests that

> Theory and the experience of the United States suggest that EC regions will become increasingly specialized, and that as they become more specialized, they will become more vulnerable to region-specific shocks. Regions will, of course, be unable to respond with counter-cyclical monetary or exchange rate policy. [1993, p. 60]

Clearly, Eichengreen and Krugman were (are?) still in thrall to the 1961 Mundell and the fine-tuning fallacy. But once risk-sharing through portfolio diversification in bond holding is properly weighed, the case for a monetary union becomes even stronger as the constituent parts of the underlying economic union become more specialized in what they produce. Presumably, the productivity gain from greater regional specialization is one of the major benefits of having an economic cum monetary union in the first place!

7. CURRENCY ASYMMETRY: THE CENTER AND ITS PERIPHERY

Because some countries are small and thus naturally more specialized in what they produce, we hypothesized that they have more to gain from economic specialization if complemented by the uninhibited two-way portfolio diversification made possible by a large currency area. Among diverse countries, risk in each country could thereby be reduced. In line with past theorizing on optimum currency areas, we made no further distinctions between "strong" and "weak" currencies.

However, size and degree of specialization are not everything. Within any international monetary system with a mélange of national currencies, a natural asymmetry will develop. One national money becomes the vehicle or N^{th} currency for facilitating international exchange and reducing inter bank transactions costs among the other N currencies (Mundell 1968, McKinnon 1979). In the aftermath of World War II, the US dollar played, and still plays, this facilitating role in the world economy at large. (Now, the major exception is the quasi-independent monetary domain of the newly created Euro – including its periphery of small economies to the east.) Once established in this facilitating role, economies of scale and network effects are sufficiently strong to preserve the N^{th} country's central position "indefinitely."

This currency asymmetry may involve more than simply facilitating foreign exchange transactions among banks. Because this N^{th} currency will also be widely used in invoicing foreign commodity trade, the other N–1 countries will attempt to anchor their own price levels by pegging to the central currency if its purchasing power is stable, i.e., the center country has succeeded in stabilizing its own price level, Having this common *nominal anchor* is also a way of establishing mutual exchange rate stability in any region where trade with neighboring countries is important. In the 1950s and 1960s, the dollar played this anchoring role in Europe and elsewhere. But, because the dollar's purchasing power depreciated (dollar price inflation was high) in the 1970s into the 1980s, within the EU this central anchoring role shifted to the deutsche mark–whose purchasing power was then more stable than the dollar's.

Is this key-currency approach to fixing exchange rates a satisfactory way of implementing an optimum currency area? Having the EU be a deutsche mark zone was all well and good for imparting greater domestic price-level and exchange-rate stability among its members. However, this key-currency approach has a serious drawback. The distinction between a strong central currency and weaker ones on the periphery is aggravated beyond what the underlying "fundamentals," e.g., lower previous inflation in Germany than in Italy, would warrant. The asymmetry in the exchange rate arrangements themselves magnifies (aggravates?) the distinction between a strong central money and weaker ones on its periphery–whether within pre-Euro Europe with the old deutsche mark, or in the rest of the world today with the dollar.

Because the central money becomes the definitive (or ultimate) means of payment in the system, it also takes on the quality of being the safe haven asset into which people fly when macroeconomic equilibrium in any of the peripheral countries is disturbed. This currency asymmetry means that, other things being equal, risk premia on bonds denominated in any of the peripheral currencies issued by non creditor countries will be higher–and likely the term structure of finance will be shorter–then for bonds denominated in the currency of the central country. And this asymmetry naturally reinforces itself. Because periodic capital flight into the center country destabilizes the demand for any peripheral country's currency, macroeconomic management on the periphery is more difficult. Forced devaluation is an ever-present threat.

Conversely, macroeconomic management in the center country itself becomes easier. When there is trouble at home, domestic nationals see no more fundamental asset into which they want to fly. If its authorities make mistakes or are confronted with some unexpected macroeconomic upheaval, they have a much longer line of credit with the rest of the world that relieves pressure to devalue the currency. For example, to help finance the huge fiscal

deficits arising from German reunification in 1991, Germany could automatically draw on a long line of credit *in marks* from other European countries because they were all part of a deutsche mark zone.

Indeed, bonds issued by the center country–such as US Treasuries for the dollar zone, i.e., everywhere but Europe–are widely accepted as the "risk free" asset in the international capital markets. Sovereign and private bond issues from countries outside the United States are rated, by Moody's or Standard & Poor, relative to US Treasuries. Concomitantly, risk premia in medium and long-term interest rates are measured against those on US Treasuries as the benchmark. Risk premia on shorter term financial instruments are measured against the London interbank offer rate (LIBOR) on dollars. Thus the United States collectively can, if it so chooses, sell dollar denominated claims on itself to foreigners on a net basis almost indefinitely–as per the ongoing American current account deficit of the last 20 years (McKinnon 2001b).

In contrast, any heavily indebted "peripheral" country typically cannot borrow internationally in its own currency without paying a high risk premium in its interest rates. And any build up of foreign currency liabilities (usually in the key currency, i.e., dollars) must be finite. Otherwise, if repayment of these dollar liabilities comes into doubt, the peripheral country will find its own currency under attack.

The upshot is that the relative ease with which the country issuing the key or central currency can borrow in international capital markets makes it easier to maintain price stability at home. This then strengthens its reputation as a safe haven relative to its periphery–thus completing a virtuous circle. But currency asymmetry for the system as a whole is exacerbated. The peripheral countries are left with residual exchange rate uncertainty and higher interest rates. Thus, in an optimum currency area using a key currency to fix exchange rates, international portfolio diversification in the capital market–particularly the bond market–is still impeded–albeit less so than if exchange rates fluctuated freely.

8. EXCHANGE RATE AGREEMENTS WITHOUT AN ANCHOR: AN IMPOSSIBILITY THEOREM

Would it be possible to escape from this "tyranny" of currency asymmetry arising out of the key-currency approach by opting for exchange rate agreements countries that are more purely symmetrical? Once a given number of countries qualified as an optimum currency area, the older literature seemed to suggest that exchanges rates could be simply fixed by mutual agreement. Indeed, from time to time, this belief has had a significant effect on how exchange rate negotiations were conducted.

Since the final breakdown of the Smithsonian dollar parities in 1973, there have been numerous proposals for international cooperation to re-establish a "parity" regime or "basket pegs" to limit volatility in effective exchange rates. But, with the important exception of European Monetary Unification, all have come to nought. *The nub of the problem is that these proposals have aimed for mutual exchange rate stabilization without first establishing a common nominal anchor*. This error of omission is partly political and partly conceptual.

The conceptual problem–of trying to reach an exchange rate agreement without specifying a nominal anchor, and of treating all countries party to the agreement symmetrically–is more basic. Since 1973, it has been the rock on which attempts to reach agreements to stabilize exchange rates–while retaining a measure of national monetary sovereignty–have foundered. To make this analytical point, let us discuss just two historical cases:

(1) The post-Smithsonian attempt by governments in the industrial countries and many developing ones to re-establish official parities for exchange rates symmetrically, i.e., by not officially resurrecting the dollar as key currency, culminated in the failed Nairobi conference of 1974 (Williamson, 1977); and

(2) For East Asia in the 1990s into the new millenium, the repeated advocacy of basket pegs, sometimes called trade-weighted exchange rates, by many economists (Williamson, 1999; Ogawa and Ito, 1999) and also by the Japanese government.

Both efforts failed, not because of a lack of political will, but because what the well-meaning negotiators were expected to do was logically inconsistent. They were charged with designing a plan for stabilizing exchange rates without simultaneously agreeing on a common, and binding, nominal anchor for domestic monetary policies. Nor did they fully recognize that only N–1 of the N countries party to the agreement could have an independent choice for their exchange rates. Some one country had to play the role of the Nth country with a passive exchange rate policy, but with the size and monetary credibility sufficient to stabilize its own price level independently. Whence the impossibility of a purely symmetrical exchange rate agreement.

In the absence of a politically neutral metallic standard anchored by gold or silver, the only real alternative is to choose one national money as the anchor for the system. But in the absence of full-scale political integration as within the EU, the appearance of subordinating national monetary sovereignty to a putative anchor country is politically unacceptable. Indeed, in the 1950s and 1960s, the great advantage of the Bretton Woods Agreement was that it provided a fig leaf of equality among members for what was

essentially a dollar standard. Each national government could maintain its dollar parity with a greater sense of political equanimity.

9. EMU AND THE EURO-DENOMINATED BOND MARKET

The great success of European Monetary Union was to move beyond an asymmetrical deutsche mark zone to a common currency that is surprisingly balanced in both the economic and political senses. EMU comes close to the ideal of allowing unhindered portfolio diversification for international risk sharing. But systematically testing this proposition empirically is a major task far beyond the scope of the present paper. However, the great natural experiment– the abolition of 11 national currencies in Europe in favor of the Euro on January 1, 1999–is very revealing.

Within Euroland, private Euro-denominated bond issues grew explosively after January 1, 1999. Overall Euro bond issues in the first half of 1999 were 80 percent higher than a tabulation of all bond issues in the old legacy currencies for the first six months of 1998 (Capital Data, 1999). Most strikingly, issues of Euro-denominated *corporate* bonds were almost four times as high in 1999 as compared to 1998. Why the startling difference?

In the pre-Euro regime, the D-mark was king–the central or safe-haven European currency for the group. In effect, Europe was on a common monetary standard based on a key currency where other European countries tried, with some uncertainty, to maintain exchange rate stability against the mark. Thus, private corporations in European countries on Germany's financial periphery–such as Italy, Portugal, and Spain, which mainly issued bonds in lire, escudos, and pesetas respectively–suffered currency risk relative to German issuers of mark-denominated bonds The resulting risk premia, i.e., higher interest rates particularly at longer term in these "club-med" countries, kept finance short term and largely bank based. For example, in the early to mid 1990s, interest rates on Italian lire-denominated bonds were as much as five percentage points higher than those on German mark-denominated bonds.

After 1 January 1999, the extinction of these risky "peripheral" currencies has allowed previously hobbled Italian, Portuguese, Spanish (and even French?) firms to lengthen the term structure of their debts by issuing Euro-denominated bonds at much lower interest rates–now close to those paid by German firms–while escaping from the clutches of their bankers. European banks, in turn, are madly consolidating–although unfortunately only at the national level. Even the highly indebted governments of the club-med countries, albeit under the constraint of the Maastricht Agreement, can roll over their large government debts (now denominated in Euros) at interest

rates within a half a percentage point or so of those paid by the German Federal Government.

The *demand* for longer-term Euro denominated bonds also increased. European insurance companies and pension funds as well as banks had been confined to keeping the bulk of their assets denominated in the home or domestic currency in order to match their domestic-currency liabilities. But with the move to a common, and for the formerly peripheral countries, a stronger currency, these financial institutions became free to diversify and acquire Euro-denominated assets on a Western Europe-wide basis–and from foreigners who are willing to sell Euro-denominated bonds in the newly created market. Thus is the term structure of corporate finance in Western Europe being lengthened with the lower interest rates reflecting lowered overall portfolio risk.

In summary, in encouraging risk sharing through portfolio diversification in international bond markets, preliminary evidence from the great Western European experiment suggests that–on both the demand and the supply sides–a common currency may be considerably better than a common monetary standard based on a key currency. In middle and eastern Europe, countries now use the Euro itself as a key currency for securing exchange stability. Although the greater price-level stability and mutual exchange rate security from such a policy are still substantial, the full benefits of international bond-market diversification will have to wait until these countries become part of Euroland.

10. STOCK MARKETS AND HOME BIAS

An enduring empirical puzzle in the finance literature is why owners of common stock appear to diversify much less internationally than what a proper risk-return trade off based on the capital-asset pricing model (CAPM) would predict. Karen Lewis [1999] nicely reviews this huge literature. But what is striking, at least to this author, is how little emphasis was given to currency risk per se in explaining home bias.

In computing historical means, variances, and covariances of returns to holding foreign stocks in comparison to American, authors typically translate everything into dollar terms at the exchange rate prevailing during the period over which the foreign returns were calculated. In these econometric studies (often quite elaborate), industry risks are thereby completely melded with exchange rate risks.

However, absent currency risk *within* a country like the United States, the stock market ideally distributes capital across industries according to their expected returns and risks vis-à-vis the general market. Highly paid analysts

specialize in particular industries to estimate the future risk and return of industry X against the general market, and then disaggregate further to pick winning firms within that industry. In the absence of stock market bubbles and crashes, all this is well and good for increasing industrial efficiency.

Now take such a group of domestic industry specialists and broaden their range to study the same industries in a foreign country, with its own monetary regime, as well as those at home. In picking winners abroad compared to at home, exchange rate risk now tends to reduce the effective expertise of our industry analysts. Noise is introduced into the information set within which they normally work because their profit projections have to be translated back into dollars through the uncertain exchange rate.

And this noise problem is not easily resolved by hiring foreign exchange specialists to project the future course of the exchange rate. Because a floating exchange rate between any pair of industrial economies moves like a random walk, the rate can't be predicted with any accuracy.

The upshot is that expert industry analysts and portfolio managers tend to pull in their horns and recommend, for any one industry, lesser holdings of those common stocks denominated in foreign currencies than in the domestic currency. In the aggregate across all industries, therefore, holdings of foreign stocks will be less than a purely mechanical application of an international CAPM model would project. This loss-of-technical-expertise argument is probably not the only reason for home bias in international equity holdings, but it is a leading candidate.

Considering money, bonds, and equities together, what can we conclude about asset diversification to deal with asymmetric supply shocks across regions or countries? Clearly, under floating exchange rates, currency risk will undermine international risk sharing and diminish cross-holdings of all three financial assets. But even a credibly fixed exchange rate between any pair of countries will still leave a residual currency risk because of the "natural" currency asymmetry that develops. Full asset diversification by risk-averse financial intermediaries with narrow profit margins will still be inhibited. Only a common money will convince financial intermediaries to diversify as freely across national boundaries as they do across regions in the same country–as what the later Mundell (1973a) wanted.

11. AGGREGATE DEMAND SHOCKS: A FURTHER TAXONOMY

The earlier and more Keynesian Mundell (1961) focused on asymmetric demand shocks and the need for counter cyclical macroeconomic policies: "Suppose demand shifts from the products of country B to the products of country A...with the need to allow an appreciation of B's currency to restrain

aggregate demand in B–and a depreciation of A's currency to stimulate it in A." But under what circumstances are such asymmetrical demand shocks likely to occur?

Diversified Industrial Economies: Suppose A and B were highly diversified industrial economies, say, Germany and France, each producing thousands of goods with a huge overlap in product lines. Could consumer preferences suddenly shift in the way the quotation from Mundell implies? It is difficult to imagine that consumer preferences would suddenly shift en masse away from thousands of French goods in favor of thousands of German goods. The law of large numbers in product diversification would be overturned. One could, perhaps, imagine a narrower demand shift away from autos toward motor cycles–but this would not be particularly country specific. Thus, for diversified economies, the need for exchange rate flexibility to offset volatility in consumption preferences is negligible.

Apart from pure shifts in consumer preferences, there is another kind of "demand" shock which economists, e.g., Harry Johnson [1972], used to believe would warrant an exchange rate adjustment. Suppose country A began to inflate aggregate demand so as to create incipient (or actual) inflation. An ongoing depreciation of A's currency could accommodate this to avoid a loss in A's international competitiveness while obviating the need for domestic disinflation and a possible rise in unemployment. But, with the death of the Philips Curve, we now know that such accommodation would violate the principle of time consistency in policy making–and simply lead to further instability. Unless the country in question has a chronic need for revenue from the inflation tax, better that it be forced to disinflate to maintain the exchange rate.

This dilemma, to deflate or not to deflate to maintain economic competitiveness with one's trading partners, only arises because they have separate monetary regimes. Under a common currency, differential rates of inflation could not persist.

Undiversified Economies: Particularly for primary products producers with unstable terms of trade, the argument is often made [see Kenen 1969) that countries retain exchange rate flexibility–devalue when the terms of trade turn against you–in order to ameliorate the resulting income fluctuations. But this view has several problems.

First, tying the exchange rate to the fortunes of one or two primary products would undermine private portfolio diversification and international risk sharing–as described above. Foreigners would not want to hold financial claims on the domestic economy if they knew the exchange rate was volatile. And this reluctance would make it difficult for domestic nationals to hold financial claims on foreigners without the economy as a whole running (an expensive) current account surplus, i.e., allowing net capital flight.

Second, the liquidity value of the domestic money itself could be impaired. If only one product was produced domestically–say, coffee–and the purchasing power of domestic money was tied to the price of coffee, people would opt to hold foreign currencies for domestic transacting. In an economy producing one or two exports but importing a broad basket of goods of all kinds, the natural way of satisfying our stable money axiom is to peg your currency to that of a highly diversified trading partner. Otherwise workers would be reluctant to accept wages specified in term of domestic rather than foreign money.

The Endogeneity of the OCA Criteria. The presence of asynchronous demand shocks, or asynchronous income fluctuations more generally, could well diminish as trade integration increases. Of course, under a common currency, asynchronous demand shocks would be quite minor because of the disappearance of separate national monetary policies. As Jeffrey Frankel [1999 p. 24] puts it for nascent monetary unions "The OCA criterion might be satisfied ex post even if not ex ante".

But short of adopting the rather draconian solution of forming a monetary union, Frankel and Rose [1998] show that trade integration itself reduces the extent to which income fluctuations are uncorrelated, i.e., are asynchronous. For 21 industrial countries from 1959 to 1993, they first computed correlations of income changes between every pair of countries. They then regress these correlation coefficients on a measure of trade integration for each pair. Across their 21 countries, higher trade linkages are associated with higher correlations in income fluctuations. In effect, globalization, in the form of greater trade integration, seems to be pushing the world towards being potentially one giant optimum currency area with, ideally, a single common money. But see below.

12. SUMMING UP

There are only two good reasons why any country *not* be on a common-currency regime or a common monetary standard with its trading partners. Note that a common monetary standard is one of highly credible fixed exchange rates but national monies remain in circulation. The late 19th century gold standard is a good example–as are the key-currency regimes described above.

First, a country could not participate in either a common-currency regime or a common monetary standard if its own public finances were too weak. If its government needs to retain control over issuing its own currency in order to extract more monetary seigniorage from the financial system–possibly through inflation–than a common-currency regime would permit, then no fixed exchange rate regime is feasible or advisable. More subtly, by owning

its own central bank, the government becomes the preferred borrower in the national capital markets. Because the government alone owns the means settlement on interest-bearing debt denominated in the domestic currency, it can float public debt at the lowest interest rates in the domestic capital market [McKinnon, 1997]. This preferred access to the domestic bond market also allows the national central bank to act as a "lender-of-last resort" for domestic commercial banks.

For example, several Eastern and Middle European countries do not yet have sufficient fiscal and financial control domestically to allow them to give up their national central banks in order to join a broader monetary union. And, as Mario Nuti (2000) suggests, adopting a currency board may not be a satisfactory half way house: the country loses control over its national central bank without yet gaining access to the discount window of the central bank for the broader monetary union.

Second, no sufficiently stable monetary standard exists in the rest of the world. Natural trading partners, by the OCA criteria, are themselves not stable in a monetary sense. The current 12 members of Euroland took several decades of intense bargaining over economic integration and mutual fiscal constraints before the stage was set for the European Central Bank (ECB) to credibly issue a common currency. However, because the Euro is now firmly established as a stable European monetary standard, the much smaller Eastern and Middle European countries now have more incentive to join it.

At the present time, the political will for full-scale economic and monetary integration with neighboring countries simply doesn't exist elsewhere. With less demanding political requirements, however, a common monetary standard based on a key currency might be able to achieve many–although not all–of the benefits of a common currency [McKinnon 1996]. A successful common monetary standard requires two key interrelated conditions:

(1) Over a long future time horizon, there exists some credible anchoring mechanism so that countries which attach themselves to the standard succeed in stabilizing the purchasing powers of their national monies; and

(2) most countries, particularly close trading partners, attach themselves convincingly to the same standard.

The gold standard's great advantage was that it was international. By the late 1870s, most economies that were significant international traders had adopted it. Moreover, it provided a credible anchoring mechanism for national price levels until interrupted by World War I in August 1914. This lack of persistent inflation and the gold standard's universality meant that exchange rates were credibly fixed and capital markets were remarkably well integrated from the 1870s to 1914. The gold standard's great drawback, of course, was recurrent liquidity crises from runs on gold–which was a principal reason for the advent of the Great Depression of the 1930s.

In the modern period, the US dollar serves as a (quasi) monetary anchor for most countries outside of Europe. It has the great advantage over the 19th century gold standard of being a fiat managed currency–and, in the modern period, not itself subject to runs or liquidity crises. However, the dollar standard has major drawbacks.

First, although informal pegging to the dollar is widespread in Asia, the Americas, and much of Africa in the short run [Calvo and Reinhart, forthcoming], these exchange rate pegs are "soft" and lack credibility–particularly over the long term. In contrast, gold mint parities in the 19th century were highly credible on a long-term basis–although occasional short-term suspensions could occur. But it is the long-term credibility in exchange rate parities which was the key to the remarkable integration of capital (mainly bond) markets in the late 19th century [McKinnon, 1996].

Second, the modern dollar standard is not universal enough in securing stable exchange rates. Argentina pegs strongly to the dollar, but other members of Mercosur do not. So even if one considered Mercosur to be an OCA, Argentina can still be upset by Brazil suddenly devaluing. Similarly, in the increasingly integrated East Asian economies before the 1997 crisis, all countries except Japan had been informally pegged to the dollar. However, because of weak or non-existent commitments to maintain their dollar exchange rates in the long run, they were all vulnerable to inadvertent "beggar-thy-neighbor" devaluations. But the desire for a common monetary standard in East Asia remains strong. After the 1997-98 crisis, most East Asian countries resumed informal dollar pegging in 1999 and 2000 [McKinnon, 2001a].

In conclusion, outside of Euroland and the drive for "Euro-isation" in Middle and Eastern Europe, the best interim hope for regional OCAs like East Asia or Latin America is to recognize the inevitability of dollar predominance and work toward rationalizing the rules of the dollar-standard game [McKinnon 1996 and 2001a]. But that is a story for another time.

ENDNOTES

[1] William Eberle Professor of International Economics. mckinnon@stanford.edu and http://www.stanford.edu/~mckinnon/ . Thanks to Klaus Desmet and to Margaret McKinnon for invaluable assistance in preparing this paper.

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Discussion

Ronald I. McKinnon's

OPTIMUM CURRENCY AREAS AND KEY CURRENCIES

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Ron McKinnon has written a provocative paper. It has forced me to recast my own views about the evolution and relevance of optimum currency area (OCA) theory. He and I arrive at rather different conclusions, but that does not diminish my debt to him.

I shall start, as he does, with the two papers by Mundell (1961, 1973a). I reread them several months ago, when gearing up to write a paper of my own, and was struck by a strange similarity between them, not with the important difference that McKinnon emphasizes. When you read them closely, you find that both papers contemplate a world with little or no capital mobility. Does that surprise you? It should, if only because so much of Mundell's early work dealt with the effects of capital mobility on the functioning of macro policies under fixed and flexible exchange rates. Nevertheless, the framework used in Mundell (1961) relies crucially on that assumption, although he does not invoked it explicitly, and the analysis in Mundell (1973a) relies on official reserve flows rather than private capital flows to finance intertemporal trade and thus achieve a primitive form of risk sharing in the face of a real shock, such as a crop failure.

Consider the two-country Keynesian framework used in Mundell (1961).[1] The two countries have fixed their bilateral exchange rate, but each one has its own central bank and can therefore stabilize domestic demand in the face of an expenditure-changing shock. By implication, there cannot be much capital mobility, as it would prevent the central banks from pursuing independent monetary policies aimed at stabilizing aggregate demand. But even in the absence of capital mobility, the countries cannot cope successfully with an expenditure-switching shock.

Suppose that both countries begin in *internal balance* (i.e., at the highest levels of output consistent with price stability) and in *external balance* (i.e.,

with balanced trade between them), and consider the effects of an expenditure-raising shock in Country 1. It will raise aggregate demand in both countries, driving them away from internal balance, and will cause Country 1 to run a current-account deficit. But Country 1's central bank can resolve both countries' problems by tightening its monetary policy sufficiently to restore internal balance in Country 1. Now consider instead the effects of an expenditure-switching shock – a shift in demand from Country 2's good to Country 1's good. It will raise aggregate demand in Country 1, reduce aggregate demand in Country 2, and cause Country 1 to run a current-account surplus. No combination of monetary policies can restore internal balance in both countries and also bring their current-account balance back to zero. This is, of course, the case featured in Mundell (1961), which had profound effects on the subsequent development of OCA theory. It explains why so much attention was paid to the problems posed by asymmetric shocks and to the importance of labor mobility between countries forming a monetary union.

Under the Keynesian assumptions used in Mundell (1961), the expenditure-switching shock at issue will create excess demand in Country 1's labor market and excess supply in Country 2's labor market, and there must then be some way to clear both countries' labor markets. Wage flexibility would do that, but it is precluded Mundell's assumptions Yet labor mobility will also do it. A movement of workers from Country 2 to country 1 will clear both countries' labor markets and also redress the trade imbalance between them. Workers who move from Country 2 to Country 1 will continue to consume both countries' goods. But their demand for country 1's good will be domesticated, becoming part of domestic demand in Country 1 and ceasing to be part of import demand coming from Country 2. Conversely, their demand for country 2's good will be internationalized, becoming part of import demand coming from Country 1 and ceasing to be part of domestic demand in Country 2. Hence, perfect labor mobility can automatically resolve the intractible problem posed by an expenditure-switching shock, and the domain of labor mobility becomes the defining characteristic of an optimum currency area. It can contain many countries but only one unified labor market.

Let's turn now to Mundell (1973a), which provides an uncommon argument for a firmly fixed exchange rate or common currency. Consider two countries identical in size that grow the same crop, wheat, which is the only form of food and cannot be stored for more than six months, Let the two countries lie on opposite sides of the Equator, so that Country 1's crop is harvested in June and Country 2's crop is harvested in December. From January through June, Country 1's households must live on wheat imported from Country 2; from July through December, Country 2's households must live on wheat imported from Country 1.

There are many ways to conduct and finance the intertemporal trade required to feed both countries' households. Consider a rudimentary arrangement. Let the normal wheat crop be 100 bushels and the normal price of wheat be equal in each country to one unit of its currency. Suppose that each country's currency is fully backed by gold and that its central bank stands ready to swap one unit of its currency for one bar of gold. At the start of January, farmers in Country 1 will hold 100 units of their country's currency, representing their wheat sales during the previous six-month period, but they must use that currency to cover their production costs during the current six-month period (January-June). Households in Country 1 will thus earn 100 units of their country's currency from their country's farmers. They will use 50 units to buy gold from their central bank in order to buy the other country's currency and thus import wheat, and they will retain 50 units in order to buy domestic wheat during the next six-month period (July-December).[2]

Under these assumptions, total spending on each country's wheat is fixed firmly at 100 units of that country's currency, comprising the 50 units of domestic currency held over by the country's own households from the previous six-month period, and the 50 units of domestic currency bought with gold by the other country's households using half of the income earned during the current six-month period.[3] Therefore, the wheat market will clear at the normal price when the most recently harvested crop is of the normal size.

Assume, however, that torrential rains damage Country 1's crop just before the June harvest, reducing it from 100 to 75 bushels. The price of wheat will rise, and both countries' households will be affected identically during the next six months. There is, in this sense, equitable risk sharing. Consider, however, another possibility. Suppose that Country 1's central bank revalues its currency unilaterally by charging 2 bars of gold for a unit of Country 1's testimony currency. Total spending on wheat expressed in Country 1's currency will fall to 75 units, and there will be no increase in the domestic price of wheat. Country 1's households will be able to buy 50 bushels of wheat, but Country 2's households will be able to buy only 25 bushels. There will thus be no risk sharing whatsoever; in fact, Country 1's central bank will have shifted the whole real cost of the crop failure onto Country 2's households.

Although this story differs somewhat from the one told in Mundell (1973a), it makes the same basic point and thus illustrates the chief contribution of that paper. It is thus easy to understand why McKinnon says that the implications of Mundell (1973a) differ greatly from those of Mundell (1961). The role of cross-border labor mobility stressed in Mundell (1961), taken by itself, would lead one to favor a world divided into many small currency area, while the role of risk sharing stressed in Mundell (1973a),

taken by itself, would lead one to favor a world comprising a small number of very large currency areas, even perhaps a single world currency. But I can find nothing in Mundell (1973a) to justify McKinnon's description of that paper. He says that it emphasized 'the need to promote asset diversification for international risk sharing' as well as 'the forward-looking nature of the foreign exchange market.' But there is no asset diversification in Mundell (1973a). In fact, the main point of the paper can be made using a model like mine, in which there are no assets other than national currencies and gold and thus no portfolio diversification.[4]

Mundell (1973a) goes on to discuss other matters, most notably the optimal level of reserves under various currency regimes. And Mundell (1973b) is, as McKinnon says, a remarkable statement of the case for European monetary union. But McKinnon is wrong to base the main part of his paper, which does indeed deal with capital mobility, portfolio diversification, and risk sharing, on Mundell (1973a). By doing that, indeed, he belittles the originality of his own contributions.

Before commenting briefly on those contributions, let me draw attention to another difference between Mundell's two papers. In Mundell (1961), the two central banks are able to conduct independent monetary policies. That is why I said that it deals implicitly with a world of no or low capital mobility. In Mundell (1973a), the two central banks have no monetary policies. In effect, then, both papers deal with simple currency unions – what Corden (1972) called *pseudo* monetary unions, rather than full-fledged monetary unions. Arrangements of this sort cannot survive under conditions of high capital mobility. There can be only one monetary policy under those conditions, which means that there can be only one central bank. And the converse is equally true. A monetary union with a single central bank will not function well in the absence of high capital mobility. The effects of its monetary policy will not be transmitted promptly or evenly throughout the monetary union. Finally, of course, high capital mobility contributes to risk sharing by fostering portfolio diversification. McKinnon is therefore perfectly right to stress the contribution of capital mobility to the functioning of a monetary union. In my view, however, he goes too far.

McKinnon appears to be making two closely connected statements. First, the risk sharing provided by portfolio diversification can cushion the effects of asymmetric shocks, reducing the need for the labor mobility stressed in Mundell (1961). Second, exchange-rate risk is the principal barrier to portfolio diversification. Therefore, firmly fixed exchange rates are the right way to go, and monetary unions are better from this standpoint than other fixed-rate regimes. Nevertheless, he says, a common monetary standard based on a key currency such as the dollar might achieve many of the benefits of a common currency.

I have reservations. Portfolio diversification can contribute to consumption smoothing and thus reduce the welfare losses caused by certain sorts of shocks.[5] The spread of multinational production can also provide investors with insurance against country-specific shocks. Iinvestors can achieve a good deal of global diversification by holding shares in national firms that are themselves diversified globally. The spread of multinational production may even help to explain the well-known home bias in equity holdings. Few households, however, have asset holdings large enough to protect them against the effects of fluctuations in the demand for their labor services. That is why, in Kenen (1969), I drew attention to the role of endogenous interregional fiscal transfers as partial substitutes for labor mobility.[6] Furthermore, McKinnon is wrong to dismiss the importance of asymmetric demand shocks. He blames these on monetary-policy errors that should not be accommodated. But booms and bubbles are not always due to policy errors, and their effects cannot be offset fully by a sensible single monetary policy. When, in fact, the central bank of a monetary union pursues a policy rule like that of the European Central Bank, concerning itself with price stability across the union as a whole, a spontaneous increase of investment or consumption in one member country takes on properties similar to those of the expenditure-switching shock featured in Mundell (1961). Output, income, and aggregate demand rise by less in the member country experiencing a positive demand shock, but they fall absolutely in the other member countries; see Kenen (forthcoming).

Finally, I have serious reservations about McKinnon's principal conclusion, that the world, apart from the Eurozone, should move toward a rule-based dollar standard. Suppose for a moment that all of the world's nontrivial countries, other than those of the Eurozone but including Japan, were able to achieve simultaneously something resembling internal balance and were also able to achieve a set of current-account balances consistent with sustainable levels of long-term capital flows. Then and only then could they adopt a key-currency regime, such a dollar standard, that would subject them to a common monetary policy. But can we expect them to stay forever in that blissful state? Can we realistically rule out divergent developments in various countries, such as the Japanese boom of the late 1980s or the US boom of the late 1990s? Can we realistically rule out fiscal-policy errors, political upheavals, oil-price shocks, and the like, let alone monetary-policy errors by the center country? I have strong doubts. Many have said that no single exchange-rate regime can be right for all countries at all times. I would go much further. No single exchange rate can be right for any country at all times.

ENDNOTES

[1] The point made briefly here is developed more fully in Kenen (forthcoming).

[2] At the start of January, then, Country 1's central bank will have deposit liabilities to farmers worth 100 units of domestic currency and will hold 100 bars of gold. At the end of June, it will have deposit liabilities to households worth 50 units of domestic currency and will hold 50 bars of gold. (At the start of July, the balance sheet of Country 2's central bank will look like that of Country 1 at the start of January; at the end of December, it will look like that of Country 1 at the end of June.)

[3] I rule out one other possibility. If there is a crop failure of the sort discussed below, causing an increase in the price of wheat, consumers in the importing country may choose to spend more than half their current income on imported wheat, in order to consume more imported wheat during the current six-month period at the cost of consuming less domestic wheat during the next six-month period. This would make for a more complicated story; a single crop failure would cause price fluctuations in future six-month periods. But it would not blur the basic point at issue.

[4] Note that my version of Mundell's story can be readily transformed into a description of risk sharing in the European monetary union. Let Country 1 be France and Country 2 be Germany. Replace their national currencies with Euros and their central banks' gold holdings with transferable claims on the European Central Bank (or, strictly speaking, claims on TARGET, the real time gross settlement system of the European System of Central Banks). The whole story goes through without modification – apart from the awkward fact that France and Germany were, at last report, on the same side of the Equator.

[5] There is, indeed, a large empirical literature supportive of that proposition; see, e.g., Mélitz and Zumer (1999) and the papers cited there.

[6] This is the same paper that McKinnon criticizes for suggesting that developing countries with undiversified exports should perhaps opt for flexible rates, and his objection has some merit. If such a country sought to pursue price stability defined in terms of a price index heavily weighted with imported goods, an adverse shift in its terms of trade, causing a currency depreciation, could amplify the output-reducing effect of the terms-of-trade shock by requiring a tightening of monetary policy. Elsewhere in his paper, however, McKinnon endorses my main point – that highly diversified developed countries are unlikely to suffer large expenditure-switching shocks. In fact, his language is almost identical to mine, invoking the law of large numbers. And if I am right on that score, I cannot be utterly wrong about the obvious corollary that highly specialized developing countries may need exchange-rate flexibility. (Such countries, moreover, cannot readily afford to buy protection against terms-of-trade shocks by purchasing financial claims on the outside world – which is what McKinnon appears to propose.)

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Chapter 8

DESIGNING EU-US ATLANTIC MONETARY RELATIONS: THE IMPACT OF EXCHANGE RATE VARIABILITY ON LABOR MARKETS ON BOTH SIDES OF THE ATLANTIC

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1. INTRODUCTION

The Euro/dollar rate is one of the most closely watched exchange rates in the world, much as the DM/dollar rate was in the past. Its gyrations, which are at times difficult to understand on purely economic grounds, are often perceived to be politically costly. But why should politicians and economists care about exchange rate variability? The superficial answer has usually been that exchange rate variability discourages trade. Unfortunately, a large empirical literature on this issue has not been able to document a strong link between exchange rate variability and the volume of trade.[1] However, we would argue the volume of trade is not an important variable in itself. From a

normative point of view other variables, such as (un-) employment are much more important. In particular one would not consider undertaking concrete policy steps to reduce trans-Atlantic exchange rate variability if the result were only an increase in the volume of trade. However, if one could obtain a reduction in (un-) employment such a policy might become much more attractive.

The starting assumption of most economists is likely to be that exchange rate variability cannot have a significant impact on labor markets given the weak link between exchange rate variability and the volume of trade mentioned above. However, we would argue, that the absence of a strong impact of exchange rate variability on the volume of trade does not imply that there should be no link between exchange rate variability and (un-) employment (and investment). This becomes clear once one asks the question: why would an increase in exchange rate volatility lead quickly to a lower volume (flow) of trade? The theoretical models that are used in this context start typically from the idea that in order to export one needs to sustain a sunk cost. This sunk cost is meant to represent the need to create a new production line or to build up a distribution system in foreign markets. But most firms engaged in international trade already have a very elaborate distribution network in major markets. A German or US globally operating automobile manufacturer will typically not have to create a new production line or to build up a new distribution system in order to increase sales in its major markets.

Of course, an increase in volatility will lead firms to discount future profits from exports more heavily. But this implies only that firms will invest less in export- (or in general in trade-) oriented activities. This might depress future export (trade) volumes but firms will not necessarily export less in the short run just because exchange rate variability has increased. The long run response will be much more difficult to isolate in empirical work because there are other long run trends that influence trade volumes (e.g., reduction in transport costs, shifts in tastes, etc.) and because variability changes so much over time. Trade volumes today might be influenced by some average of the variability experienced over a number of years but this would be difficult to measure even with the annual data on volatility that is often used.

Another reason why exchange rate variability might not have an immediate impact on the volume of trade comes from the widespread 'pricing to market', i.e., firms keep local prices fixed even in the face of large exchange rate changes.[2] This implies that foreign sales should react little to exchange rates. Firms just keep producing and export more or less the same amount, but their domestic currency earnings become variable whereas their domestic cost remain stable. Exchange rate variability can thus certainly influence the variability of profits, even if quantities react little. Firms might

thus react to an increase in exchange rate (and hence profit) variability in the first instance by reducing investment in trade related activities.

Exchange rate variability might thus have mainly a significant short run impact on investment[3] and on (un-) employment because investment is an important component of demand. Moreover, in most continental European countries (and even in the UK until the 1980s) hiring workers represents also an investment in the sense that there are high costs to reversing this decision. This is an additional reason (independent of the demand effect) why exchange rate variability should affect (un-) employment. Moreover, if labor is *de facto* a semi-fixed factor of production, short run marginal costs of changing the volume of production must be very high. This fits well with the observed sluggishness of reaction of the volumes of trade to exchange rate changes mentioned above.[4] Firms will typically be reluctant to engage new labor (which involves a heavy sunk cost in most European countries) if the variability of the exchange rate is high so that the probability that this labor will not be used after all is also high.[5] However, this does not apply to the US, so that one would expect that the link between exchange rate variability and US labor market performance should be less strong.

In this paper we consider the influence of two measures of external exchange rate variability of the Euro area[6] and of the US on two key labor market indicators: i) (changes in) unemployment rates, and, ii) employment growth. These are the two politically most important variables of the indicators linked to popular explanations of the impact of financial volatility on the real sector (Dixit (1989), Aizenman and Marion (1996), Ramey and Ramey (1995)).

The outline of the paper is as follows. In section 2, a simple model of investment and uncertainty is developed. A possible transmission channel that could account for a negative relationship between uncertainty and (un-) employment both in the short and the long run is discussed. Section 3 presents some measures of openness to show that it is not unreasonable to suppose that exchange rate variability has a significant impact on the economies on both sides of the Atlantic and defines our measure of exchange rate variability. Section 4 presents and comments some first results. Section 5 concludes and discusses the implications of the results for the debate on the design of EU-US monetary relations.

2. EXCHANGE RATE UNCERTAINTY IMPACTS ON LABOUR MARKETS? MODELLING THE OPTION VALUE OF WAITING

As indicated above, the prior of many economists would probably be that exchange rate variability is not a significant factor and that there should be no link between exchange rate variability and unemployment. But the recent results presented in Belke and Gros (1998, 2000) do not support this prior. They show that it is difficult to maintain the hypothesis that intra-European exchange rate variability does not have a significant impact on unemployment, job creation and investment. In the following, this section presents a simple model of investment and uncertainty. It discusses a possible transmission channel that could account for a negative relationship between uncertainty and (un-) employment both in the short and the long run.

The following crude model which abstracts from risk aversion has been designed by Belke and Gros (1998) to illustrate the basic idea underlying the 'option value of waiting' à la Dixit (1989). The model does not pretend to be close to reality. It was designed to convey the basic idea in a simple way. Moreover, we wanted to present a model that allows us to ask whether even a *temporary*, *short-run* increase in uncertainty can have a strong impact on investment.

Consider a set-up in which there are three periods. During the first two periods (called zero and one) a single investment project can be undertaken that will bear fruit during the following periods. If this project is undertaken during period zero it yields a return during the periods one and two. If it is undertaken during period one it yields a return only during period two.

The investment project starts with a unitary cost that is sunk and its return is uncertain because it depends on the exchange rate (e.g., because costs are in domestic currency but the price is determined by the exchange rate). The return to the investment in period one (i.e., if the set-up cost is undertaken during period zero) has a certain component, denoted by r_1, and a stochastic element, e, which is uniformly distributed between $+\sigma_1$ and $-\sigma_1$. An increase in σ means an increase in uncertainty, or an increase in the mean preserving spread (σ is the standard deviation). The return in period two has also a non-stochastic part, denoted by r_2, and it also depends on the exchange rate. The exchange rate is assumed to follow a random walk. The expected exchange rate for period two is therefore equal to the exchange rate realised during period one, denoted by e_1. But the uncertainty can persist, hence it is assumed that the exchange rate during period two is distributed uniformly around $e_1+\sigma_2$ and $e_1-\sigma_2$. As will become apparent soon the variability of the exchange rate during the second period has no influence on

the result. The non-stochastic parts of the returns can differ for many reasons that are not essential to the model and the same applies to the variances.[7]

The (unconditional) expected value of the return from the project, if it is undertaken in period zero, is therefore equal to:

$$E_0(I_0) = -1 + r_1 + r_2 > 0 \quad r_1, r_2 > 0 \qquad (1)$$

For simplicity, discounting issues and risk aversion are not taken into account in this sub-section so that all decisions can be based only on expected values (the same assumption is used also by Dixit (1989)). In order to make the problem non-trivial, the expected return from investing must be non-negative.

If the firm waits until period one it keeps the option whether or not to invest. It will invest only if the exchange rate realized during period one (and hence expected for period two) is above a certain threshold level, or barrier, denoted by b. Given that an investment in period one yields a return only during period two, this barrier to make the investment just worthwhile is given by the condition that the expected period two return equals at least the set-up cost:

$$-1 + r_2 + b = 0 \text{ or } b = 1 - r_2 \qquad (2)$$

The decision whether or not to wait will be based on the expected value of that strategy, which is given by:

$$E_0(I_0) = [(\sigma_1 + b)/2\sigma_1] + [(\sigma_1 - b)/2\sigma_1][-1 + r_2 + (\sigma_1 + b)/2] \qquad (3)$$

where the first element is the probability that it will not be worthwhile to invest (in this case the return is zero). The second term represents the product of the probability that it will be worthwhile to invest (because the exchange rate is above the threshold) and the average expected value of the return under this outcome. Given condition (2) this can be rewritten as:

$$E_0(I_0) = (\sigma_1 - b)[-b + (\sigma_1 + b)/2\sigma_1] \qquad (4)$$

simplifying and collecting terms yields:

$$E_0(I_1) = (\sigma_1 - b)^2 / 4\sigma_1 \qquad (5)$$

This is the key result since it implies that an increase in uncertainty *increases* the value of the waiting strategy. Formally this results from the fact that in this model σ_1 must exceed b (otherwise the exchange rate could never reach the threshold). Equation (5) is then an increasing function of σ_1. As σ_1 increases it becomes more likely that it is worthwhile to wait until more information is available about the expected return during period two. At that point the firm can avoid the losses that arise if the exchange rate is unfavorable by not investing. This option not to invest becomes *more*

valuable with *more uncertainty*. The intuitive explanation is that waiting implies that the firm foregoes the expected return during period one, but it keeps the option not to invest, which is valuable if the exchange rate turns out to be unfavorable. The higher the variance the higher the potential losses the firm can avoid and the higher the potential for a very favorable realization of the exchange rate, with consequently very high profits.
The difference between the two expected returns is equal to:

$$E_0(I_1) - E_0(I_0) = (\sigma_1 - b)^2 / 4\sigma_1 - (r_1 - b) \qquad (6)$$

An increase in the expected return to period one (r_1) makes it obviously less likely that it will pay to wait.

An interesting special case is that of b = 0 (the non-stochastic component of the second period return equals the set-up cost; in this case the unconditional expectation of the overall return to the project, if undertaken immediately is equal to r_1). In this case expression (6) collapses to:

$$E_0(I_1) - E_0(I_0) = \sigma_1 / 4 - r_1 \qquad (7)$$

However, the standard deviation of the exchange rate (or rather of the impact of the exchange rate on the return) would have to be four times as large as the non-stochastic part of the return in period one to make waiting the better choice.

An important implication of the model is that *only the current*, short term uncertainty σ_1 has an impact on the decision to wait. Future uncertainty, represented here by σ_2, does not enter in the decision under risk neutrality. If one takes a fixed period, e.g., one year, the likelihood that investment will be postponed to the end of that period depends only on the uncertainty during that period and not on future uncertainty. This implies that *even short spikes* in uncertainty as, e.g., grasped by a contemporaneous uncertainty proxy in empirical investigations of the real option effect detected above, can have a *strong impact* on investment.

This crude model has abstracted from risk aversion. However, we would argue that the basic conclusion that even a temporary increase in uncertainty can make a postponement of investment optimal, is robust because a prolonged period of high uncertainty means that expected returns beyond the next period would be discounted more heavily. Belke and Gros (1998) prove this point formally.

What does this little model show? We retain two conclusions: i) Even a *temporary* 'spike' in exchange rate variability can induce firms to wait with their investment (of course and for exactly this reason, the level of the exchange rate at the same time loses explanatory power). ii) The relationship between exchange rate variability and (un-) employment should go partially

via investment demand. A *direct* impact of exchange rate variability on employment can arise if one considers that the investment project (that is at the core of the simple model presented here) could also just stand for training a new shift in the use of existing machinery. Even if it were possible to fire these workers rapidly the investment in training would still be lost if the firm does not decide to export after all. The sunk cost aspect of hiring a new group of workers would be even stronger if they could then not be fired. In this interpretation the model would imply that an increase in uncertainty, even if only in the short run, could have a direct and immediate negative impact on employment, that is independent of the channel via investment demand.[8]

Our model is not detailed enough to have implications in terms of persistence. A simplistic interpretation in which the set-up cost consists just of the construction of a factory would imply that a short-term increase in exchange rate uncertainty should increase unemployment in the short run, but should not have long run effects. However, it has often been argued that in Europe there is hysteresis; i.e. even *temporary* shocks can have *permanent* effects on unemployment. One channel through which hysteresis can arise is that the human capital of workers that have been fired depreciates rapidly so that they will not be able to find a new job at the old wage because they will have become less productive (see e.g. Blanchard and Diamond (1994)). If one interprets the set-up cost as relating to human capital this view could also be compatible with the model presented here. Hence even in our set-up there could be *strong hysteresis*. In empirical terms, exchange rate variability should not a priori be excluded to even appear in a *long-term* relationship between employment and its determinants. However, some readers might have a strong prior that temporary shocks cannot have permanent effects. We do not want to take a stance on this issue here because it is not central to our analysis. The empirical results based on empirical tests of the significance of exchange rate variability in simple VARs which we present below are compatible with both views.

3. HOW TO MEASURE OPENNESS AND EXCHANGE RATE VARIABILITY?

Do the US and the Euro area constitute closed economies for which the exchange rate should be irrelevant? To gain insight into the potential exposure of the US and Euroland to exchange rate variability one should look at the share of trade in national income. Many have suggested that Euroland should be effectively closed, compared to its individual constituent economies. However, even if one uses only external trade to gain an impression of the exposure of Euroland to exchange rate shocks, the degree of openness for the EU-11 is still 16.1%. Euroland is thus not exactly a closed

economy. It is useful to compare the degree of openness of the G-3, i.e., the United States, the Euro-11 and Japan. As shown in Table 1 below, Euroland, is substantially more open than either the US or Japan. In both of these other economies, trade accounts for only about 11-12% of income.

These raw data thus suggest, as argued in Gros and Weiner (2000), that Euroland may be substantially more open than the United States. This implies that the European Central Bank may need to give the exchange rate a larger role in determining its policy for Euroland, especially in its second pillar ('all relevant variables'), at least compared to the US Federal Reserve Bank. The difference between Germany and Euroland is (proportionally) about as large as between the US and Euroland.

Table 1 – Different openness indicators 1980 and 1998 (as a share of GDP)

Trade ((exports plus imports)/2):	Eurozone		United States		Japan		Germany*	
	1980	1998	1980	1998	1980	1998	1980	1998
Goods only		13.0	8.5	9.5	11.9	8.7	23.1	22.5
Goods and services		16.1	10.3	12.1	14.1	10.6	27.6	25.0
All current account transactions**		21.0	12.4	15.5	15.5	15.8	31.2	32.6

Source: IMF, IFS and ECB. *German data are for 1996 instead of 1998, **from IMF current account data.

In summary, the raw data suggest that while Euroland is in the aggregate less open than its constituent members (here only Germany though), it is substantially more open than the United States. This fact alone suggests that the exchange rate should play a more important role for Euroland than for the US.

However, the US dollar/Euro rate might not necessarily be the most important single exchange rate for Euroland. For the Euro-11, trade with the UK is slightly more important than trade with the US (see Gros and Weiner (2000) for the regional distribution of G-3 trade). Likewise, for the United States, trade with Canada alone is more important than trade with Euroland. Nevertheless, total bilateral trade between Euroland and the United States is the most important bilateral trade relationship in the world indicating the relative importance of the US dollar/Euro exchange rate.

Having established that Euroland is open enough for the exchange rate to matter, at least potentially, we now proceed to the second practical issue: How should one measure exchange rate variability?

We used a very simple measure: for each year of our sample 1973 to 1999 we calculated a standard deviation of the basis of twelve monthly observations of the first difference of the exchange rate. What kind of exchange rate did we take as the basis for our calculations? We used both the

nominal effective rate of the US and the Euro area (reconstituted for the past) and the bilateral Euro-dollar rate. In order to have percentage changes we used directly the first difference of the raw numbers for the effective exchange rates as they are indices, with a base around 100. In the case of the bilateral Euro/dollar rate we used the first difference of the natural logarithm. The historical series of the external exchange rate of Euroland was taken directly from the official sources, which calculate the average of bilateral exchange rates of the 11 present Euro countries, with weights given by the non-Euro trading partners. In order to convey an exact picture of our proceedings the algorithm for the construction of the variability variables is described in annex 3.

We use *monthly* exchange rates to calculate volatility instead of daily (or other higher frequency) volatility because the required data were easier to obtain on a consistent basis for the entire sample period. Another reason to prefer this measure over more short-term alternatives (e.g., daily variability) was that we are convinced that while the latter might be important for financial actors it is less relevant for decisions whether *to export or to invest*, which have a longer time horizon. The drawback of this decision was that we had to use annual data in order to have a meaningful measure of variability. We thus had only about 20-25 observations for each country, but this turned out to be sufficient.

In principle one could have used option prices to extract implicit forward looking volatilities, but options prices are generally available only for the US dollar and sometimes against the DM, and even then only for limited periods. Hence it would not have been possible to construct a measure of Euro volatility on a consistent basis using option prices. We used *actual* exchange rate changes instead of only unanticipated ones, but at the monthly horizon the anticipated change is usually close to zero given the small interest rate differentials in Europe.[9] Hence actual and unanticipated changes should give the same results (see also Bundesbank (1996), pp. 67 ff., Gros, Thygesen (1992), p. 102, and Peeters (1997), pp. 5 ff.).

An advantage of using monthly data is that price indices are available on a monthly basis so that one could use real exchange rates. We have preferred to use nominal rates in this first test since over a short term horizon nominal and real exchange rates are usually highly correlated.

The average variability (standard deviations) of the nominal exchange rate of the Euro area was 1.1 (%) for the post 1973 period, that of the US was much higher at 1.99%. The data for the other variables, and the correlations between measures of nominal and real exchange rate variability (usually around 90 %) are shown in Table 2 below. Note that the tables display the correlation coefficients (Bravais, Pearson) in percent. Are the correlation coefficients significant? Under the assumption that both variables are (commonly) normally distributed the (one-sided) test-statistics

$(\text{cor.coef.}/\sqrt{(1-\text{cor.coef.})^2}) \cdot \sqrt{N-2}$ may be used. The latter is standard t-distributed with N-2 degrees of freedom (N = numbers of observation). As corresponding calculations immediately reveal, the lowest empirical realization of this test statistics (Table 2.3, correlation EXVNEEREU/EXVNEERUS) amounts to 2.6462 which is still significant on a one percent level.

Table 2 – Correlation matrices of indicators of exchange rate variability

2.1 – Euroland

	EXVNEEREU	EXVREEREUCPI	EXVREEREUULC
EXVNEEREU	1973 to 1999 mean: 1.10 std. Dev.: 0.35	/	/
EXVREEREUCPI	87	1980 to 1999 mean: 1.30 std. dev.: 0.37	/
EXVREEREUULC	96	85	1978 to 1999 mean: 1.08 std. dev.: 0.29

Sample: minimum 1980 to 1999 (N=20).

2.2 – United States

	EXVNEERUS	EXVREERUSCPI	EXVREERUSULC
EXVNEERUS	1973 to 1999 mean: 1.99 std. Dev.: 0.73	/	/
EXVREERUSCPI	97	1980 to 1999 mean: 1.69 std. dev.: 0.59	/
EXVREERUSULC	82	79	1979 to 1999 mean: 2.3 std. dev.: 1.03

Sample: minimum 1980 to 1999 (N=20).

2.3 – Dollar-Euro rate vis-à-vis effective rates

	EXVNEEREU	EXVNEERUS	EXVNERDOLLECU
EXVNEEREU	1973 to 1999 mean: 1.10 std. dev.: 0.35	/	/
EXVNEERUS	27	1973 to 1999 mean: 1.99 std. dev.: 0.73	/
EXVNERDOLLECU	55	66	1978 to 1999 mean: 2.28 std. dev.: 0.67

Sample: minimum 1978 to 1999 (N=22).

We were surprised to find that the effective rate for the dollar was more variable than that of the Euro. Given that more countries peg to the dollar one would have expected the contrary. The fact that the real exchange rate indices are more variable than the nominal ones just confirms that exchange rates, at least in the short run, do not move to offset price developments.

4. EMPIRICAL ANALYSIS

In this section we present and comment the results of first tests of the importance of two measures of exchange rate variability (effective and bilateral) on two measures of labor market performance (changes in unemployment and employment growth) on both sides of the Atlantic. To start with a summary: exchange rate variability enters all equations with the expected sign and is in nearly all cases statistically significant.

4.1 Methodology

Before commenting the individual results we need to explain our methodology. In cases of doubt we always preferred *taking differences* since the disadvantages of differencing when it is not needed appear to us much less severe than those of failing to difference when it is appropriate. In the first case the worst outcome would be that the disturbances are moving average, but the estimators would still be consistent, whereas in the second case the usual properties of the OLS test statistics would be invalidated. All macroeconomic series were taken from the Ameco data set of the EC Commission. All exchange rate data were taken from the IMF (see in detail annex 2).

As a first step we present the results of some simple tests. We explain the first difference in the unemployment rate and the first difference in the index of employment by their own past and lags of our measure of exchange rate variability. The results summarized below in the first row of Tables 3 and 4 are thus standard causality tests on the annual data used throughout this paper.

Tables 3 and 4 summarize the regression results from bivariate VARs on annual data (1973-1999, sometimes shorter periods had to be used subject to data availability).[10] The hypothesis tested is, as usual, that exchange rate variability does not have an influence on the two variables investigated here.[11]

All the results presented here are implicitly based on a comparison of two regression equations (notations chosen for consistency reasons, for a similar procedure see Gros 1996, pp. 19 ff., and with an application to export shocks Belke and Gros 1999):

$$DUE_t = \alpha_0 + \sum_{i=0}^{N} \alpha_i \cdot DUE_{t-i} + u_t, \text{ and} \qquad (8)$$

$$DUE_t = \alpha_0 + \sum_{i=0}^{N} \alpha_i \cdot DUE_{t-i} + \sum_{i=0}^{N} \beta_i \cdot (D)EXV_{t-i} + u_t \qquad (9)$$

where DUE_t stands for (change in) the unemployment rate (between period t and t-1), $(D)EXV_{t-i}$ specifies the (change in) intra-European exchange rate variability (between period t-i and period t-i-1), u_t represents the usual i.i.d. error term and N is the maximum number of considered lags (here according to Gros 1996: 2 lags). Exchange rate variability (measured by an indicator as explained above in section 3) can then be said to "cause" unemployment if at least one ß, i.e. one of the coefficients on the past and contemporaneous (change in) exchange rate variability, is significantly different from zero. In other words, these tests measure the impact of (changes in) exchange rate variability on (changes in) national unemployment rates once the autonomous movements in unemployment have been taken into account by including lagged unemployment rates among the explanatory variables. Thus, a significant effect (of whatever sign) implies that one can reject the hypothesis that (the change in) exchange rate variability does not influence unemployment at the usual confidence levels. In order to be allowed to use the standard t-distribution for the purpose of model selection one has to use *changes* at least in the unemployment rate as the level of this variable is clearly *non-stationary*. Substituting the change in employment (DEMPMAN) in the above setting describes our proceedings in the case of employment and investment instead of unemployment.

Table 3 shows the results using (the level) of effective exchange rate variability and Table 4 the ones for the variability in the bilateral Euro/dollar rate.

For each of the two variables mentioned we first used as explanatory variables only their own past and lags of exchange rate variability. The results reported in the first row imply that exchange rate variability, whether measured by the standard deviation of the nominal effective rate or by that of the bilateral Euro/dollar rate, has a significant impact.

As exchange rate variability could be either caused by, or stand for some other macroeconomic variables we also performed a series of robustness tests by adding

i) the (first difference of the) level of the exchange rate ,
ii) the spread between long and short term interest rates, and,
iii)the (first difference of) real short term interest rates.

Only the coefficient estimate, its significance level and the lag order of exchange rate variability are displayed in the summary tables. The numbers in parentheses correspond to the lag order of exchange rate variability. If the impact effect is for example estimated to be lagged two years, this might indicate inflexibilities in the respective national labor market. The expected sign of the (change in) exchange rate variability is positive for (the changes in) the unemployment rate and negative for (the changes in) employment.

The specification of the underlying equations is based on the usual diagnostics combined with the *Schwarz Bayesian Information Criterion (SCH)*. The latter is chosen as our primary model selection criterion since it asymptotically leads to the correct model choice (if the true model is among the models under investigation, Lütkepohl (1991)). The regression which reveals the lowest SCH-value and at the same time fulfills the usual diagnostic residual criteria is chosen.[12] As already stated above, he sample has been chosen to be 1973 to 1999 in order to exclude the Bretton Woods period of fixed exchange rates, which would have introduced structural breaks in the relationships. The procedure is exactly the same for each country. We never intervene to exercise a discretionary judgment. As usual, we add country specific dummies from time to time in order to account for possible breaks in the VAR relations. These dummies are added only if they improve the SCH statistics (higher informational contents even if a penalty for the extra dummy is taken into account) and do not lead to a rejection of the normality assumption of the residuals (Jarque, Bera (1987)). At the same time they should contribute to fulfill the criteria on the residuals, especially those on normality. However, none of our results is due to the implementation of these dummies. Most of the dummies were also economically meaningful (relating to the two oil crises, or the onset of EMU for Euroland) and most disappeared when policy variables were introduced in the robustness tests below.

4.2 Summary of results

The results have to be read off Tables 3 and 4 as follows. In these tables, point estimates for the impact of exchange rate volatility are displayed together with their significance levels. For Euroland, the point estimate obtained from the first specification implies that a decrease of one percentage point in the variability (standard deviation) of the nominal effective exchange rate of the Euro is associated during the same year with a decrease in the Euroland unemployment rate of about half a percentage point; and this is followed two years later by another reduction in the unemployment rate of 0.9 percentage points. We will comment only briefly on the impact coefficients because the longer run effects depend of course on the dynamic behavior of the variables (Belke and Gros (1998, 2000)).

Table 3 – Regression results based on variability of nominal effective exchange rates

	Euroland		**US**	
	Unemployment	**Employment**	**Unemployment**	**Employment**
Basic, best specification	0.47 * 0.90 (-2) ***	1.01*** -0.93 (-1)*** -1.44 (-2)***	0.53 ***	-0.33
Robustness: additional variables				
First differential of exchange rate	0.67 ** 0.74 (-2) ***	-0.83 ** -0.93 (-1)*** -1.40 (-1) ***	0.49 **	-0.36
Spread (long – short term)	0.80 **	-1.17 ***	0.31 **	-0.74 (-1) **
Real short term interest rate	0.93 **	-1.79 ***	0.42 *	-0.30 (-1)
Change in real short term interest rate	0.93 **	1.80 ***	0.48 **	-0.74 **

Note: Point estimates for the impact of exchange rate volatility are displayed together with their significance levels (***: 1 %; **: 5 %; *: 10 %).
Numbers in brackets refer to the lags of the implemented volatility variable.

Table 4 – Regression results based on variability of nominal bilateral Euro/dollar exchange rate

	Euroland		US	
	Unemployment	**Employment**	**Unemployment**	**Employment**
Basic, best specification	0.48 **	-0.44 **	0.40 **	-0.58 (-1) *
Robustness: additional variables				
First differential of exchange rate	0.50 (-1) **	-0.74 (-1) ***	0.48 **	-0.53 (-1) *
Spread (long – short term)	0.45 **	-0.34	0.43 **	-0.78 (-1) ***
Real short term interest rate	0.52 ***	-0.46 **	0.42 **	-0.70 (-1) *
Change in real short term interest rate	0.51 ***	-0.53 **	0.54 ***	-0.79 (-1) **

Note: Point estimates for the impact of exchange rate volatility are displayed together with their significance levels (***: 1 %; **: 5 %; *:10 %). Numbers in brackets refer to the lags of the implemented volatility variable.

The first upper right hand entry in Table 3 comes from a standard causality type regression whose results are reproduced in detail below in Table 3a in order to give a concrete example. This entry refers to the impact of the variability of nominal effective exchange rates on Euroland labor markets. The dependent variable in this case is represented by the change in the unemployment rate (DUREU). The depicted specification of the regression equation leads to the 'best' result in terms of the (lowest realization of) Schwarz criterion.[13]

A similar story emerges when one does the same test on the rate of employment growth defined as the first difference in the index of employment, i.e. roughly speaking the percentage change in the number of employed persons. Exchange rate variability had a significant impact on the European labor market from this angle as well. The regression result for the impact of the variability of nominal effective exchange rates for Euroland on the dependent variable employment (DEMPEU) is displayed in Table 3b (again we chose the 'best' fit in terms of lowest realization of the Schwarz criterion). Let us now turn to some robustness tests of the empirical results gained so far.

Table 3a – Example regression:
unemployment rate on the variability of nominal effective exchange rates

Dependent Variable: DUREU
Method: Least Squares
Sample: 1973 1999
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.32	0.44	-2.97	0.01
DUREU(-1)	0.64	0.15	4.31	0.00
EXVNEEREU	**0.47**	**0.26**	**1.83**	**0.08**
EXVNEEREU(-2)	**0.90**	**0.27**	**3.31**	**0.00**
D83	-1.45	0.53	-2.74	0.01
D95	-0.97	0.47	-2.04	0.05
R-squared	0.62	Mean dependent var		0.28
Adjusted R-squared	0.53	S.D. dependent var		0.65
S.E. of regression	0.44	Akaike info criterion		1.39
Sum squared resid	4.09	Schwarz criterion		1.68
Log likelihood	-12.82	F-statistic		6.96
Durbin-Watson stat	1.60	Prob(F-statistic)		0.00

Table 3b – Example regression:
employment growth on the variability of nominal effective exchange rates

Dependent Variable: DEMPEU
Method: Least Squares
Sample (adjusted): 1973 1998
Included observations: 26 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.98	0.79	5.05	0.00
DEMPEU(-1)	0.48	0.13	3.82	0.00
EXVNEEREU	**-1.01**	**0.35**	**-2.92**	**0.01**
EXVNEEREU(-1)	**0.93**	**0.34**	**-2.77**	**0.01**
EXVNEEREU(-2)	**-1.44**	**0.31**	**-4.66**	**0.00**
D96	-1.37	0.62	-2.21	0.04
R-squared	0.72	Mean dependent var		0.37
Adjusted R-squared	0.53	S.D. dependent var		0.91
S.E. of regression	0.54	Akaike info criterion		1.80
Sum squared resid	5.82	Schwarz criterion		2.09
Log likelihood	-17.43	F-statistic		10.11
Durbin-Watson stat	1.020	Prob(F-statistic)		0.00

4.3 Robustness: The Impact of Potential Shock-Absorbers

The purpose of the following is to report the results of some tests for the robustness of the relationships found so far. We try to take into account the three most plausible ways in which exchange rate variability could stand for some other variable. For each hypothesis we then implement the same procedure based on the SCH criterion explained above.

The three hypotheses we consider are:

i) Exchange rate variability is just a sign of a misalignment (i.e., a wrong level of the exchange rate).

ii) Exchange rate variability just reflects the stress caused by a tight monetary policy, tight monetary policy being defined as the spread, the difference between long and short term interest rates.

iii) Exchange rate variability just reflects the stress caused by a tight monetary policy, but tight monetary policy is defined as high real short term interest rates.

i) A first possible reason for the significant negative (positive) correlation of exchange rate variability with (un-) employment might be that this volatility just stands for misalignments of the real exchange rate. The basic argument is simple: the dollar (respectively the Euro, or its main component, the DM) was very strong when it was also variable. This argument could also be turned on its head because one suspects that the dollar was variable when it was very weak. But it needs to be addressed because it represents a popular explanation for the results we obtain.

In order to take this hypothesis into account, we added the first difference (the level is not stationary) of the (nominal) effective exchange rate (NEER) in the regressions displayed in Tables 3 and 4, second rows. Note again, that point estimates *for the impact of exchange rate volatility* are displayed together with their significance levels. The results suggest that this hypothesis does not hold a lot of explanatory power as the addition of the level of the exchange rate does in no case change the magnitude or significance level of the coefficient of exchange rate variability. Except for the case of the US (employment), the latter remains highly significant.

ii) Transatlantic exchange rate variability could also just be the result of tight monetary policy pursued on either side. The hypothesis is that a restrictive monetary policy leads to employment losses in the short-term, and that this is exclusively assigned to exchange rate variability in Tables 1 and 2. However, this problem of identification can be reduced by explicitly adding a variable that indicates the tightness of the national monetary policy to the equation. We use the *spread* (long minus short term interest rates) as a first indicator. This control variable actually improves the performance of the equation overall (see annex), and has the additional advantage of eliminating the two

lagged effects that appear for Euroland, if one uses the effective exchange rate.

iii) Adding only the real short term interest rate to the equation also does not change the results in the sense that the coefficient on exchange rate variability remains significant. We used both the level and the first difference of this control variable because it was not clear whether it is stationary or not. However, as the last two rows of Tables 3 and 4 show, the results are virtually identical whether one uses the level or the first difference.

For Euroland we thus find that in all equations exchange rate variability is significant and enters with the expected sign. For the US there are, however, more entries in the unemployment column. It is interesting to note that, by contrast, for Euroland the impact on employment seems to be stronger.

5. CONCLUSIONS AND IMPLICATIONS FOR THE DEBATE ON THE DESIGN OF EU-US MONETARY RELATIONS

Our main policy conclusion is that reducing exchange rate variability in the two dominant G3 economies should bring substantial *benefits*. The data from the past suggest that exchange rate variability had a statistically significant (and economically small, but non-negligible) negative impact on unemployment and employment in Euroland. For the US the evidence points only to an impact on unemployment. Volatility in the bilateral rate and the nominal effective rates seems to matter.

We would argue that volatility matters because all employment and investment decisions have some degree of irreversibility (Darby et al. (1998)). They are discouraged by exchange rate variability as can be shown in a variety of models.[14]

A common argument against reducing exchange rate variability is the position that "volatility must have valve somewhere." In other words, could the gains from suppressing exchange rate variability that are suggested by our results be lost if the volatility reappear elsewhere, for example in higher interest rate variability? We would argue that it is simply not possible at present to prove whether other variability will go up (or down) with efforts to limit G3 exchange rate fluctuations. But recent research is suggestive. Rose (1995), for example, shows that official action can reduce exchange rates variability even holding constant the variability of fundamentals such as interest rates and money. Coordination between the Fed and the ECB could thus keep the dollar-Euro volatility under control. Moreover, Canzoneri et al. (1996) show that exchange rate do not generally move in the direction one would expect if they were to offset shocks. Finally, the gains from suppressing intra-ERM exchange rate variability by EMU have not been

substituted by a higher effective variability of the Euro. Much of the commentary on the Euro equates the depreciation of the Euro with exchange rate variability. However, it is not widely appreciated that, in reality, the fall of the Euro has occurred in a relatively smooth manner. Short-term variability, as measured by the volatility of monthly percent changes has actually been rather low compared to the past, as shown by Gros et al. (2000). The variability of the precursor of the Euro, the ecu, has on average been about 1.1% (per month) since 1980. In 1999, this fell to 0.7%.[15]

We realize that our results are preliminary, not least because the questions posed in this paper *have not been posed* in this way in the literature so far. The limited number of observations we have, given the annual data we use, are a further reason to be cautious.[16] We deliberately did not apply state of the art techniques in order to remain transparent for the non-technical reader. Previous results of a similar nature could be confirmed with more sophisticated econometric techniques (see references).

Many readers might sympathize with the point of view that exchange rate variability is usually not connected with variability in the fundamentals and thus undesirable. However, it is usually accepted that concrete action to reduce exchange rate variability, at least among the G-3, is either impossible or politically unacceptable. Mundell (2000) argues convincingly that this should not be the case. The huge size of private foreign exchange markets does not imply that policy cannot influence exchange rates, all that is required is that interventions should not be sterilized. In other words, monetary policy must be geared to the exchange rate, if it wants to influence it. Mundell argues that given the large degree of inflation convergence achieved the long term thrust of monetary policy is actually very similar throughout the G-3, so that it should be possible to agree on a common line that makes it possible to contemplate joint action to reduce excessive exchange rate variability.

If the results of this paper can be confirmed by future research, and if similar results can be found for other important currencies, e.g., dollar-yen, Euro-yen, they would warrant a new look at the costs from the system of globally floating exchange rates. However, much further work is needed to corroborate these first preliminary results so that they can be used as a basis for concrete policy recommendations. In particular one should concentrate on the implications for the debate on the design of EU-US monetary relations and especially on the role one believes the exchange rate should play in monetary policy, i.e., the desirability of influencing the exchange rate. By this, topics of current interest like formulating "general orientations for exchange rate policy" and "reasons for managing the exchange rate of the Euro against the US dollar" are addressed. However, in view of the recent currency crises in the second part of the last decade the same kind of analysis, i.e. the investigation of labor market impacts of exchange rate variability

seems to be highly warranted with respect to a normative analysis of the monetary relations and exchange rate arrangements with Japan, the South-East Asian countries and the LDC as well.

ENDNOTES

[1] We are grateful for valuable comments to Joshua Aizenman, Erich W. Streissler, John Williamson, and to participants in the workshop "Designing EU-US Atlantic Monetary Relations" hosted by the Institute for International Economics (IIE), Washington DC, April 17 2000, to participants in seminar of the Vienna University of Economics and Business Administration and to participants in this conference.

See, e.g., IMF (1984) and Côté (1994). However, see Rose (1999) for small significant negative effects of exchange rate volatility on trade based on panel data for 186 countries.

[2] Dornbusch (1987), see also Krugman (1989); CEC (1995) documents the more recent European data.

[3] We confirm this for intra-European exchange rate variability in Belke and Gros (1998).

[4] If consumers have adjustment costs in switching between products one could also explain why arbitrage across markets does not take place instantaneously and hence why local currency prices react so little to exchange rate changes.

[5] See Belke and Gros (1998, 2000), for example, for a model which formalizes these ideas.

[6] For an analysis of the costs of intra-European variability for European labor markets which was suppressed by EMU see Belke and Gros (1998, 2000). Their results have only recently been corrobarated by Mueller and Buscher (1999) and Buscher and Stirboeck (2000).

[7] An interesting aspect of this crude model is that it does not contain an often used assumption, namely, that the uncertainty is resolved at the end of the first period. In reality, uncertainty is usually not resolved, but persists. In a model with an infinite horizon this could imply that the same decision represents itself every period in the same way. The European Monetary Union, e.g., constitutes an exception to the rule that uncertainty just continues in the sense that the start of EMU should definitely eliminate uncertainties about the economic environment. In this sense the start of EMU might boost investment in employment.

[8] Though our model is mainly micro-founded, it could be aggregated to the macro-level along the lines of a model of micro- and macro-hysteresis in employment. In that model, a short-term increase in exchange rate uncertainty would lead to an increase in the width of the micro- and the macro-hysteresis loop and, thus, to significant long-run real effects of short-term spikes in uncertainty.

[9] For the dollar or the Euro, an interest rate differential of 4% p.a. would already be large. This corresponds to an expected rate of depreciation of about 0.3% per month. The latter is only a fraction of the standard deviation actually observed.

[10] The individual regression results are available on request.

[11] We thus use VARs in first differences of the respective real variables. Since we classify all real variables as integrated of order one we feel justified to deviate from the usual specification of an Augmented Dickey-Fuller test (including a drift term) only by neglecting the (insignificant) lagged endogenous level variable. The significance of the coefficient estimates of the lags of the changes in the real variables and of the indicator of exchange rate variability can then be judged on the basis of the usual standard normal respectively the asymptotic values of the student-t-distribution. Cf. Belke and Gros (1998, 2000) and Haldrup (1990), pp. 31 f.

[12] However, one important precondition for their application is the same number of observations for the alternative specifications. See Banerjee et al. (1993), p. 286, Mills (1990), p. 139, and Schwarz (1978).

[13] Samples being the same throughout.

[14] Our model of the 'option value of waiting' (Belke and Gros (2000)) also suggests that temporary short-run increases in variability could have a stronger impact on decisions to invest in employment than permanent ones.

[15] See Gros et al. (2000), pp. 43 ff.

[16] But we are encouraged by the extent to which previous results for intra-European exchange rate variability have been able to withstand the numerous robustness tests conducted by ourselves and by recent studies (Mueller and Buscher (1999), Buscher and Stirboeck (2000)).

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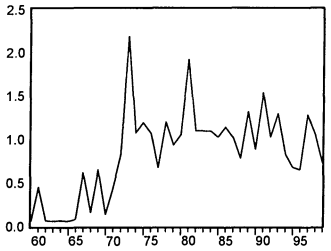
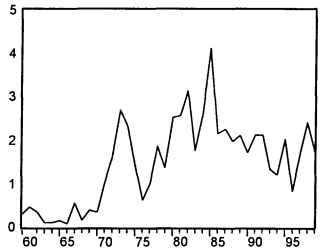
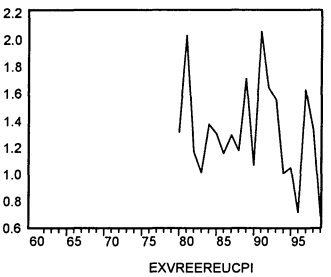
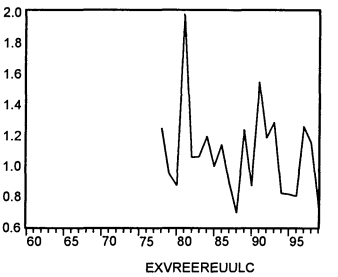
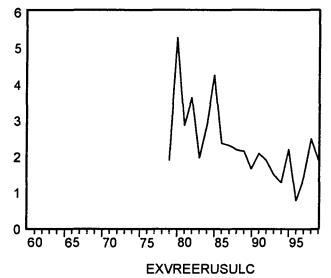
Annex 1: Exchange Rate Variability - Different Operationalizations

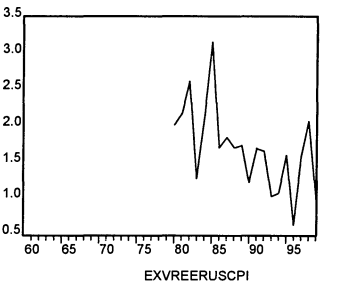


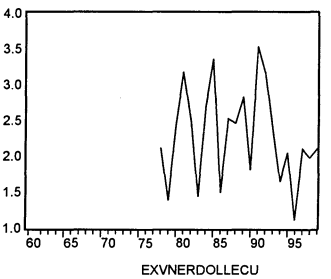












Annex 2: Data

Annual data

a) Euroland data
UREU: EU-11 unemployment rate by Eurostat, Eurostat Statistics CD ed. 1999. Data from 1999 on are forecasts (either by Eurostat or by the Commission), EUOTA7 1: Unemployment rate (Yearly) /Unemployment rate(total)/Labour Markets/Euro-zone(EU-11: BE ,DE, ES, FR, IE, IT, LU, NL, AT, PT, FI)
EMPEU: Total employment EU-11 in thousands (AMECO file, Commission)
DEMPEU = LOG(EMPEU)-LOG(EMPEU(-1))
INTLEU: Nominal long-term interest rate EU-11 (AMECO)
INTSREU: Real short-term interest rate (deflator GDP) EU-11 (AMECO)
DINTSREU = INTSREU - INTSREU(-1)
INTSEU: Nominal short-term interest rate EU-11 (AMECO)
SPREADEU: EU-11 yield curve (AMECO)

b) United States data
URUS: US-Unemployment rate EUROSTAT definition (AMECO)
EMPUS: Total employment EU-11 in thousands (AMECO
DEMPUS = LOG(EMPUS)-LOG(EMPUS(-1))
INTLUS: Nominal long-term interest rate US (AMECO)
INTSRUS: Real short-term interest rate (deflator GDP) US (AMECO)
DINTSRUS = INTSRUS - INTSRUS(-1) (no logs because of non-positive numbers)
INTSUS: Nominal short-term interest rate US (AMECO)
SPREADUS: US-yield curve (AMECO)

c) Exchange rate variability data (Euroland and United States)
EXVNEEREU: Exchange rate variability from NEEREU
EXVREEREUCPI: Exchange rate variability from REEREUCPI
EXVREEREUULC: Exchange rate variability from REEREUULC
EXVNERDOLLECU: Exchange rate variability from NERDOLLECU
EXVNEERUS: Exchange rate variability from NEERUS
EXVREERUSCPI: Exchange rate variability from REERUSCPI
EXVREERUSULC: Exchange rate variability from REERUSULC

Monthly data

Exchange rates (source: International Monetary Fund, IFS)

NEEREU	EURO AREA	IFS	163..NEUZF...NEER FROM ULC
REEREUCPI	EURO AREA	IFS	163..RECZF... REER BASED ON REL.CP
REEREUULC	EURO AREA	IFS	163..REUZF... REER BASED ON RNULC
NERDOLLECU	UNITED STATES	IFS	111..EB.ZF... US $/ECU RATE: PERIOD AV.
NEERUS	UNITED STATES	IFS	111..NEUZF...NEER FROM ULC
REERUSCPI	UNITED STATES	IFS	111..RECZF... REER BASED ON REL.CP
REERUSULC	UNITED STATES	IFS	111..REUZF... REER BASED ON RNULC

Annex 3: Algorithm to calculate the exchange rate variability series

```
SMPL 1960.1 1999.12
FOR %EX NEEREU NEERUS REEREUCPI REEREUULC REERUSCPI
REERUSULC
 GENR EXV%EX = NA
 FOR !1=0 to 468 STEP 12
 SMPL 1960.1+!1 1960.12+!1
 GENR EXV%EX=SQR(@VAR(D(%EX)))
 NEXT
NEXT
SMPL 1960.1 1999.12
FOR %EX NERDOLLECU
 GENR EXVNERDOLLECU = NA
 FOR !1=0 to 468 STEP 12
 SMPL 1960.1+!1 1960.12+!1
 GENR EXVNERDOLLECU=SQR(@VAR(D(LOG(NERDOLLECU))*100))
 NEXT
NEXT
SMPL 1960.1 1999.9
```

Discussion

Ansgar Belke, Daniel Gros and Leo Kaas's

DESIGNING EU-US ATLANTIC MONETARY RELATIONS: THE IMPACT OF EXCHANGE RATE VARIABILITY ON LABOR MARKETS ON BOTH SIDES OF THE ATLANTIC

by Joshua Aizenman
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This interesting paper investigates the impact of exchange rate volatility on employment and unemployment in the US and the EU. It tests the robustness of the Exchange Rate Volatility/employment channel, controlling for exchange rate misalignment, and for monetary conditions (long and short interest rates).

The paper starts with a model of exchange rate volatility/labor market channel, using the insight of the real option literature. The significant cost of firing workers in Europe implies that employment decisions may be viewed as a partially irreversible investment. The authors apply a three period model of the option value of waiting [akin to Dixit (1989)]. The sunk cost investment takes place in period 0. It would yield a random return in periods 1 and 2, following the realization of the exchange rate shocks. The exchange rate is assumed to follow a Random Walk. The main result is that volatility increases the option value of waiting, delaying investment.

The empirical methodology

The paper applies a VAR specification. The estimated equation is

$$DUE_t = \alpha_0 + \sum_{i=0}^{N} \alpha_i \cdot DUE_{t-i} + \sum_{i=0}^{N} \beta_i \cdot (D)EXV_{t-i} + u_t$$

It adds controls for interest rates and exchange rate level effects.

The results are:

For Euroland: Large and persistent impact of volatility. A 1% decrease in the s.d. of the nominal effective exchange rate is associated with a decrease in unemployment of 0.5% in the first year, and another reduction of 0.9% two years later. A 1% decrease in the s.d. of the nominal effective exchange rate is associated with an increase in employment of 1% in the first year, and another increase of 1.5% two years later.

For the US: Weaker, but significant effects: a 1% decrease in the s.d. of the nominal effective exchange rate is associated with a decrease in unemployment of 0.5% in the first year.

Comments

The background

The influential study by Lucas (1987) concluded that the returns from understanding the business cycle and from greater economic stability are trivial. The logic of his argument follows from the observation that the Arrow-Part risk premium is of a second order magnitude. The literature of the 1990's questioned Lucas's result. It found large negative effects of macroeconomic volatility on growth and investment [see Ramey and Ramey (1995) and Aizenman and Marion (1993)]. These empirical results suggest that the standard dichotomy between growth and business-cycle volatility does not hold [Ramey and Ramey (1995)]. Hence, greater macroeconomic stability may lead to considerable potential welfare gains. The main contributions of the present paper are in focusing the inquiry on the linkages between exchange rate volatility and employment (unemployment). The authors find large adverse effects of volatility, even after controlling for interest rates.

The model

The model illustrates nicely that uncertainty would delay investment. One should keep in mind, however, that in the presence of irreversible investment the impact of uncertainty on the average long run investment is ambiguous. While there is a delay effect, once the investment is taken, its magnitude may compensate for the delay [see Dixit and Pindyck (1994, Chapter 12)].

Disaggregation

Further insight may be gained by disaggregation. For example, Klein et al. [2000] studied 4-digit SIC in the US. They found asymmetric adjustment: appreciation plays a significant role in job distraction, but job flows do not respond significantly to dollar deprecation. The largest adjustment occurring in the most open industries. Job creation does not respond significantly to changes in the real exchange rate.

Alternative interpretation

The paper's interpretation focuses on the option value of waiting, where volatility delays investment. An alternative labor market adjustment to exchange rate volatility is by diversifying the production capacity via FDI [Aizenman (1994)], resulting with potentially similar employment effects.

"*Squeeze the balloon*"

A skeptic may point out to the "squeeze the balloon" theory, according to which reducing exchange rate volatility would induce higher volatility of other variables, offsetting the gains from the lower exchange rate noise. Hence, a fundamental issue that should be addressed in evaluating the present paper is the degree to which there is a trade off between exchange rate volatility and the volatility of other variables. The existing literature is skeptical about such a trade off. Jeanne and Rose [2000] argue that Macroeconomic fundamentals do not exhibit regime-varying volatility. They showed that a possible interpretation of this finding is that a pure float with an endogenous number of noise traders may give rise to multiple equilibria. In these circumstances the same Marco fundamentals are consistent with

- Low exchange rate volatility and a low number of noise traders.
- High exchange rate volatility and a high number of noise traders.

The fundamental reason for this possibility is that noise traders impact the equilibrium in 2 ways: creating risk, and sharing risk. The entry of more noise traders may lead to the switch from the first to the second equilibrium, where the greater risk is shared by more traders. The model provides a nice set up for the multiple equilibrium hypothesis (Eichengreen and Wyplosz [1993]).

Closing my comments, this interesting paper is a very useful reminder that we are far from understanding the business cycle, and that further attention should be given towards understanding the impact of economic volatility on macroeconomics.

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Chapter 9

THE OPEN ECONOMY MACROMODEL: INTERACTIONS BETWEEN THEORETICAL DEVELOPMENTS AND REAL-WORLD BEHAVIOR

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The development of the open-economy macro-model over the past half century can be viewed as a running, and still uncompleted, saga of the interaction between advances in economic theory and developments in the practitioners' world where economic policies are formulated and international economic transactions take place. As Maurice Obstfeld, one of the major contributors to, as well as the leading synthesizer of these developments in macro-theory, notes: "Frequently, prominent international policy problems, even crises, provide the inspiration for new [theoretical] explanations" (Obstfeld 2000b, 1).

1. POSTWAR DEVELOPMENTS IN PUBLIC POLICY AND ECONOMIC BEHAVIOR

The first and most fundamental of these real-world changes was the revival of cross-border transactions, the gradual opening up of national economies grown increasingly insular as the result of two world wars and their immediate aftermaths, separated by a decade of worldwide depression and escalating barriers to trade. The resumption of global trade began shortly after the end of the Second World War, followed more slowly and discontinuously by the restoration of currency convertibility and of international flows of private capital in various forms, from foreign exchange to bank loans and bonds of varying duration to equity investments. Together,

the expansion of international trade and international capital flows, encouraged by the ongoing liberalization of restrictions on both types of transactions, promoted a globalization of production processes reflected in the growing importance of intra-firm trade in intermediate goods. In more recent decades, these developments have been facilitated and accelerated by advances in transportation, communication, and information technologies.

The system of exchange rates pegged to the US dollar that underpinned the growing volume international transactions came to an abrupt end with the abrogation of the Bretton Woods Agreement in 1973 and the subsequent failure of efforts to restore a rules-based set of relationships among exchange rates. High volatility and periodic sudden "crises" have characterized global exchange-rate relationships ever since. The frequency of such crises and their spread via the so-called "contagion effect" both increased during the last decade of the century. The 1990s saw the collapse of the European Community's Exchange Rate Mechanism (ERM) in 1992-93, which provided much of the motivation for the creation of the European Monetary Union. Hard on the heels of that collapse came the Mexican peso crisis of 1994 and the attendant "tequila effect" that was rapidly felt by other Latin American countries. These events were in turn followed by the collapse of the Russian ruble and the Thai bat, the latter followed immediately by a widespread domino effect that came to be known as the Asian crisis of 1997-98.

Finally, the late 1990s saw the development of increasingly sophisticated financial derivatives whose variety, complexity, and capacity for customization went far beyond the straightforward forward and swaps contracts that had long been available to exchange-market participants. Because they could be utilized equally well for hedging or for speculation, the growing availability of such instruments vastly increased the potential risks associated with international transactions even as they provided new mechanisms by which market participants could shield themselves against such risks.

2. THE POSTWAR ELABORATION OF THE MODEL[1]

The early postwar years (roughly 1950-1975) saw a number of major advances in the theoretical specification of the open-economy macro-model that moved it several important steps beyond the open-economy version of the Keynesian transformation developed primarily by Metzler and Machlup. These included the Mundell-Fleming model of the open-economy adjustment process under fixed exchange rates, the monetary approach to the balance of payments and its kissing cousins, the portfolio-balance or multi-asset models. They also included early versions of the inter-temporal approach to the explanation of the current account as the result of forward-looking decisions

regarding optimal levels of saving and investment. The net impact of these developments was a gradual shift in focus from goods markets to asset markets, from flows to stocks and, therefore, from intermediate flow equilibria to long-run equilibrium situations in which flows have gone to zero because stocks have reached their desired levels. At the same time, both the classical elasticities and the Keynesian absorption analyses remained relevant, because of the role of changes in the current account in determining the path of adjustment to a new equlibrium.

The Mundell-Fleming model of the process by which both internal and external balance are restored in a fixed-rate economy that has experienced an exogenous shock introduces international capital mobility in the form of capital flows responding to interest-rate differentials between countries. Central to its explanation of the way adjustment can be induced by the appropriate assignment of monetary and fiscal policies are the assumptions that international reserve flows are sterilized, that domestic prices are rigid, and that output is demand-determined. Despite, or perhaps because of its simplicity, this model "provided the basic template for much subsequent research in both theory and policy." (Obstfeld 2000b, 2) In fact, it remains the basis of much of the discussion of exchange-rate issues today.

The assumptions of the monetary approach to the balance of payments are so different from those of the Mundell-Fleming model as to warrant the term "revolutionary", although they in fact revive many of the attributes of the much older classical theory that is associated with the name of David Hume. Focusing on the balance of payments as a monetary phenomenon, as opposed to the "real trade theory" emphasis on exports and imports, this analytical approach assumes that the demand for money is defined in stock rather than flow terms, thus requiring the integration of flows and stocks in the relevant model. On the supply side, the stock of money can change either as a result of domestic monetary policy or through international reserve flows (the non-sterilization assumption), with quite different implications for the balance of payments in the two cases. Finally, this approach assumes the long-run neutrality of money, making output exogenous and the price level endogenous, and that the Law of One Price (LOOP) holds at the macro as well as the micro level.[2]

When financial assets other than money are introduced into the general analytical approach just described, the result is a class of portfolio-balance models and their flexible-rate analogue, the asset-market approach to exchange-rate determination. In such models, the current account regains a role in the adjustment process and monetary changes can affect real variables in the short run, thus restoring some short-run independence for domestic macro-policies even under fixed exchange rates. But the long-run full-equilibrium implications of the two approaches are the same, and by the mid-1970's the two streams of analysis had essentially merged. All the classes of

models summarized so far have in common a focus on either the very short run or the full-equilibrium long run, as opposed to the Keynesian emphasis on the medium run that is, in fact, the concern of most policy issues and policy disputes in the real world.

The demise of the Bretton Woods system of pegged exchange rates in the early 1970s produced, not surprisingly, a shift in research emphasis from the economic determinants of balance-of-payments adjustment to the determinants of exchange-rate behavior. Because national governments were no longer assumed to be able to maintain income and full employment through domestic macro policies, the exchange rate took on new importance and the long-ignored distinction between changes in nominal and real rates came to the fore.

Despite their heterogeneity, the resulting models had a number of characteristics in common. They moved farther along the road from comparative static to dynamic analysis by stressing the dynamic interaction between payments flows and the difference between actual and desired asset stocks. They also postulated interactions between real and monetary variables in the determination of equilibrium exchange rates. Finally, these models generally took account of the risk premia associated with desired portfolio diversification

The period from the mid-1980s onward to the present day has seen the development of increasingly complex financial derivatives. Along with these burgeoning synthetic instruments came the development of highly complicated mathematical formulas, incorporating not only the expected values and stochastic distributions of the underlying instruments but also the correlations among them, as well as rates of time-decay, to aid in their pricing. Not surprisingly, new macro-models of the open economy began to incorporate some similar complexities. In particular, the modeling of rational expectations regarding future exchange rates and therefore, in cases where such expectations were determined endogenously, of the future paths of all relevant exogenous variables, entered the picture and greatly complicated the process of finding data with which to test the hypotheses generated by these models.

By bringing expectations regarding future values of independent variables into the determination of savings and investment, these models incorporating an inter-temporal approach to choices and associated budget constraints integrated the older elasticities and absorption approaches to balance-of-payments and exchange-rate analysis. They also made it possible to address short-run dynamic effects by integrating savings and investment decisions with the growth path of an open economy. Finally, they focused attention on the macro-economic impact of individuals' efforts to smooth the adjustment of consumption in the wake of some exogenous shock.

Incorporating strategic elements of all the theoretical advances highlighted so far, the developers of what Obstfeld (2000a and 2000b) terms the "new open economy macroeconomics" combine the assumptions of Keyensian closed-economy macro-models with international trade models that assume imperfect competition, along with the insights provided by the inter-temporal approach to decision-making. The result is a class of fully dynamic models with forward-looking economic actors that incorporate rigidity of nominal wages and prices. In these constructs, the expenditure-switching effects at the center of the older elasticities-based models coexist with the assumption of a high degree of price-segmentation among national markets for consumer goods (i.e., the violation of the Law of One Price) and pricing-to-market by firms.

The assumptions and relationships incorporated into such models reflect a growing body of empirical findings substantially at variance with the assumptions of some of the earlier theoretical constructs just described. In particular, the monetary and the inter-temporal models both assumed perfectly flexible domestic prices and the high degree of competition and integration among national markets implied by the Law of One Price. The increasing openness of national economies in the postwar world and the globalization of both production and markets, along with the growing reach and importance of multinational firms and the concomitant expansion of intra-firm trade during the last quarter of the twentieth century, appeared to give these assumptions increasing plausibility.

A number of forces operating in the direction of preserving price rigidity and segmentation of national consumer markets were less readily reflected in the paths taken by open-economy macro-theory in the wake of the Mundell-Fleming model. First, the market power exercised by large multinational firms is better reflected by an assumption of imperfect rather than perfect competition. Second, despite increasing openness, the still considerable costs of international trade, including not only transportation costs but also the costs of cross-border information-gathering, distance from suppliers and consumers, and the obstacles, both explicit and subtle, created by national sovereignty combined to preserve considerable insularity of national markets.

Gradually, a body of empirical evidence accumulated that the pass-through of exchange-rate changes into domestic prices was in fact incomplete and, by some estimates, quite low, indicating considerable ability by firms to price to market. Two other implications of econometric investigations are even more surprising. One is that the prices of so-called "tradable goods" correspond no more closely to the law of one price than do those of "non-tradables". The second is that the expenditure-switching central to the Mundell-Fleming model, arising from incomplete pass-through of exchange-rate changes, occurs more at the level of intra-firm transactions that reflect companies' changes in sourcing in response to cost changes than at the level

of arms-length sales to consumers (Obstfeld 2000b and Rangan and Lawrence 1999).

The new open-economy macro-models also make possible the analysis of both the dynamic effects of macro shocks and the impact on economic welfare of their repercussions. Some of the most recent versions add both complexity and power by demonstrating how uncertainty (defined as the second moments of relevant distributions) can affect the first moments, or means, of endogenous variables. Such stochastic models, Obstfeld notes (2000a, p. 20), are potentially able to address the welfare costs of exchange-rate variablity,[3] costs that underpin Mundell's concept of optimum currency areas as well as the leading effort to make that concept a reality in the form of the European Monetary Union. These concerns also lie at the heart of ongoing efforts to develop an "international financial architecture" that would reduce the current high volatility of exchange rates.

3. FROM "ACADEMIC SCRIBBLERS" TO "PRACTICAL MEN": IMPACTS ON BUSINESS DECISIONS

The academic interest in developing increasingly complex and realistic macroeconomic models of an open economy has been stimulated by a number of factors. These include the increasing importance of economic transactions across international boundaries, the discontinuous increase in exchange-rate variability that accompanied the demise of the Bretton Woods system, and the growing variety of derivative financial instruments. The availability of such instruments has given individuals and firms new ways to protect themselves against themselves against the effects of such volatility even as it has in all probability contributed to increasing that same volatility.

These same developments, and the advances in knowledge regarding their effects generated by the interplay between model-formulation and empirical hypothesis-testing, have also focused the attention of corporate decision-makers on exchange-rate risk. In fact, multinational firms face not one but several distinct types of risks associated with changes in exchange rates. One is the short-term risk associated with changes in nominal rates that alter the reference-currency value of a firm's revenues, costs, and repatriated flows of dividends or profits, in short, its cash flows,[4] over a time-period too short to allow for compensating changes in pricing or sourcing decisions. Such exposures can be reduced or, theoretically, even eliminated by tactical measures such as financial hedging techniques that are generally a function of corporate treasury departments.

In fact, however, the overwhelming majority of multinational firms, even those with substantial foreign exposure, engage in selective rather than

universal hedging of the type of exchange-rate risk just described. Two reasons for such selectivity come to mind. One is that financial hedging involves non-trivial transactions costs, particularly as time horizons lengthen – those who provide the hedging instruments must be compensated. Second, both my own experience with a number of multinationals and responses to survey questionnaires indicate that such firms take a non-neutral view on exchange rates, believing that they can outguess the market regarding the future movement of such rates. Indeed, there is a good deal of econometric evidence to support what corporate decision-makers believe intuitively, that forward rates are frequently very poor (though not necessarily biased) predictors of future spot rates. More broadly, after decades of investigation and controversy, the jury appears to be still out on whether exchange markets are fully efficient, or whether there are net gains, in the form of reduced cost-risk trade-offs, to be had from collecting the best possible information in order to "beat the market" with expertise.[5]

Closely related to the transactions risks just described is the translation risk that arises from the effect of changes in nominal rates on balance-sheet valuations in the reference currency of a firm's assets, liabilities and, therefore, shareholder's equity. In principal, such fluctuations could also be reduced or even eliminated through the use of financial hedges, but such behavior is virtually never observed in practice. That is partly because the amounts, and therefore the prospective costs, involved are often large. More to the point, however, such balance-sheet fluctuations affect neither cash flows nor accounting earnings, since they appear as "below the line" items in a firm's financial statements. Firms do sometimes attempt to reduce these balance-sheet effects by matching financial assets and liabilities in a particular currency. Such matching efforts are often limited, however, by legal or institutional constraints, as well by transactions (including interest) costs and the underlying operating requirements of the business.

The theoretical link forged by stochastic versions of the new open economy macro-model between variances in the values of relevant variables and their estimated mean values, on which judgments about impacts on economic welfare have traditionally hung, has a real-world analogue in the requirement for additional disclosure of firms' market risk promulgated by the Securities and Exchange Commission in 1995. These requirements included as alternative measures "value at risk" and stress testing or scenario analysis. Both of these measures rely on extrapolating past behavior patterns into the future, and therefore require a large number of historical observations on the relevant variables, as well as the assumption that there will be no changes in the structural relationships implied by these past patterns of behavior.

The value-at-risk method involves the estimation, at a stated confidence level, of the maximum loss a business will sustain should the value(s) of the

relevant independent variable(s) vary by more than two or three standard deviations (depending on whether the confidence band is set at 95 or 99 percent) from its mean. Alternatively, the stress-testing or scenario method focuses on losses that would be incurred in extreme situations, when values of market variables move well outside the confidence bands, by estimating what those losses would have been in stylized crises designed to be as analogous as possible to the situations to which a firm is most likely to be exposed in the future. Internationally-oriented financial firms, which make their profits not by avoiding but by deliberately assuming and then managing risk, pioneered such measures of risk in the 1990s and continue to work at broadening and refining them today. By the mid-90s, a substantial majority of non-financial firms were apparently using such measures internally as well, though not necessarily disclosing them to investors (Wharton/CIBC 1995, p. 17).

Finally, and most important, firms face "operating" exposure arising from shifts in real exchange rates that alter relative prices and thus competitive positions among firms with different geographical distributions of suppliers, production locations, and markets which create different currency streams of costs and revenues. These risks cannot be reduced by purely financial strategies; rather, they require "operating " responses that involve changes in one or more of the geographical patterns just mentioned.[6] Such exposures are far more difficult to measure, quantify, and predict, and their management requires strategic decisions, authority for which is likely to be dispersed in numerous positions throughout the firm rather than being centralized in one department, such as treasury.

Multinational firms do indeed respond to such operating risks in the decisions they make or modify regarding sourcing, marketing, capacity utilization and, in the longer run, plant location and the size, timing, and/or location of direct investment. But firms' ability to shift sourcing, production locations, or marketing strategies is limited, and building such flexibility into its strategic or operating plans is virtually certain to entail significant costs.[7]

Empirical evidence indicates that the impact of operating risks created by changes in real exchange rates and of firms' attempts to manage such risk has intensified since the near-universal shift from pegged to floating rates in the early 1970's. Obstfeld cites persuasive evidence that "real exchange rates become much more variable when the nominal exchange rate is allowed to float" and, furthermore, "real exchange rate movements are highly persistent." In addition, real shocks do not appear to be the primary cause of this persistence; the volatility of nominal exchange rates dominates domestic movements in relative prices in explaining the large and persistent swings in real exchange rates. (Obstfeld 2000b, pp. 15-19)

This evidence is disturbing because it suggests that the operating responses that firms use to manage their exposure to such swings may

involve misallocations in sourcing, production, and investment that are not easily reversed. There is, furthermore, a growing body of work that suggests a negative impact of volatility in real exchange rates on trade, investment, and economic growth, although the results are by no means conclusive.[8]

The fact that a firm has no foreign operations and does not engage in any transactions denominated in a foreign currency does not necessarily isolate it from operating exposure to a change in the real exchange rate. If the home currency of an import-competing domestic firm appreciates in real terms, the competitive pressure it feels from imports will intensify because those goods have become more cost-competitive. Indeed, even other domestic firms may be enabled to exert greater competitive pressure, if more of their costs are incurred abroad (as is likely to be the case, for example, with US subsidiaries of foreign-owned companies). Any firm, furthermore, whether domestic or multinational, is potentially vulnerable to the indirect effects of a sharp shift in currency values (a so-called exchange-rate crisis) on local credit conditions and the purchasing-power of its customers.

Finally, the variability of real exchange rates, together with a high degree of international capital mobility, has major implications for the types of domestic industries likely to be most significantly affected by domestic monetary policy. In a pegged-rate world, or one with flexible rates but low international capital mobility, the industries most strongly affected by a tightening of domestic monetary policy would be those that are most "interest-sensitive", of which the leading example is housing construction. With flexible rates and high capital mobility, by contrast, an inflow of capital in response to rising domestic interest rates would dampen the impact of monetary tightening on interest-sensitive activities. But the exchange-rate appreciation that accompanied such a capital inflow would have a dampening effect in particular on exporting and import-competing industries, whose global competitive position would be negatively affected by the rise in the country's real exchange rate.

The variety of risks that firms encounter through exposure to changes in real exchange rates, the broad reach of such exposure, and the complexity of managing the resulting risks, combine to intensify the troublesome real-world implications of recent theoretical and empirical investigations of the open-economy macro-model. This research indicates strongly that the major cause of such swings and misalignments is not real economic shocks, which render adjustment through one channel or another inevitable, but volatility in the exchange-rate regime itself.

4. IMPLICATIONS FOR GOVERNMENT POLICIES

One of the most powerful arguments for greater flexibility of exchange rates advanced during the Bretton Woods era was as an escape from the "impossible trinity" most clearly articulated by Richard Cooper more than thirty years ago (Cooper 1968): that it is not possible for a country to maintain simultaneously a pegged exchange rate, free mobility of capital across national boundaries, and an independent monetary policy directed toward domestic economic goals. Only by allowing the exchange rate to float in response to market forces could a country maintain its ability to utilize monetary policy for purposes of domestic stabilization without imposing restrictions on international capital flows.[9] The same open-economy macro-model, focused on the current account, that underlay this view also implied that exchange-rate flexibility could buffer the domestic economy from real disturbances originating abroad.

The introduction of endogenous capital flows explicitly into the early open-economy macro-models yielded the novel policy insight of the Mundell-Fleming model: that a country could maintain both internal and external balance under a fixed-rate regime by directing fiscal policy toward the former and monetary policy (defined as the manipulation of the interest rate) toward the latter. But these conclusions depended critically on the assumption that the impact of international capital flows on the domestic money supply and interest rate could be sterilized indefinitely. The advent of the more sophisticated models that integrated stocks and flows by specifying the dynamic interactions between asset flows and the difference between desired and actual asset stocks made clear the illogic of the sterilization assumption. Without it, the inevitability of Cooper's impossible trinity re-emerged.

Even more important were the implications of the flexible-rate analogue to the monetary approach to balance-of-payments analysis, the asset-market or portfolio-balance model of exchange-rate determination, that moving from a regime of pegged rates to one of rate-flexibility would provide no simple solution. In such models, flexible exchange rates do not provide full insulation from foreign disturbances in a world of high capital mobility. And if full insulation is a chimera, so too is full autonomy of domestic economic policies; interdependence persists in a world of flexible exchange rates.

The introduction of rational expectations into the open-economy macro-model provides a whole new perspective on government policy-making, stressing the importance of predictability of macroeconomic policies in minimizing rate fluctuations and the social costs associated with them. That is because increased predictability has the effect of reducing the size and frequency of "innovations" or "news" that, by altering expectations, produce sudden jumps in both nominal and real exchange rates, sharp deviations to

which the real economy is forced to adjust. Nor can such costs necessarily be avoided by pegging the exchange rate. In the absence of a high level of credibility for the government's commitment to a peg, investor expectations can interact with the political and economic objectives of policymakers in such a way as to produce instability in the system, multiple equilibria and even the vicious cycle of speculation and depreciation evident in the exchange-rate crises of the 1990s (Obstfeld 2000a).

Such destabilizing interactions between investors' expectations and policymakers' behavior provide a plausible explanation for the exchange-rate crises suffered by a number of developing nations in the 1990s, particularly those whose governments had committed themselves to a pegged (or crawling-peg) exchange rate. In Obstfeld's words, "When domestic banks and corporate borrowers are (over) confident in an exchange rate, they may borrow dollars or yen without adequately hedging against the risk that the domestic currency will be devalued..." (Obstfeld 1998, p.24). The occurrence of an external or a domestic policy shock that throws the economy into a situation of payments imbalance may well call into question the credibility of the government's commitment to maintaining its exchange rate and exert downward speculative pressure on the rate, creating a self-fulfilling prophecy (similar to a domestic bank run).

Under "normal" circumstances, the resulting depreciation of the exchange rate, together with an increase in the domestic interest rate, would facilitate direct movement to a new equilibrium position, restoring balance in both the domestic economy and the external payments position, as in Figure 1a below. But a high proportion of dollar- (or yen-) denominated bank debt may cause the exchange-rate depreciation to have a contractionary rather than an expansionary effect on the domestic economy. This result comes about because the depreciation increases the domestic-currency burden of foreign-denominated debt, restricting the ability of domestic banks to lend and domestic firms to borrow, thus reinforcing rather than counteracting the home-country impact of a rise in the interest rate.

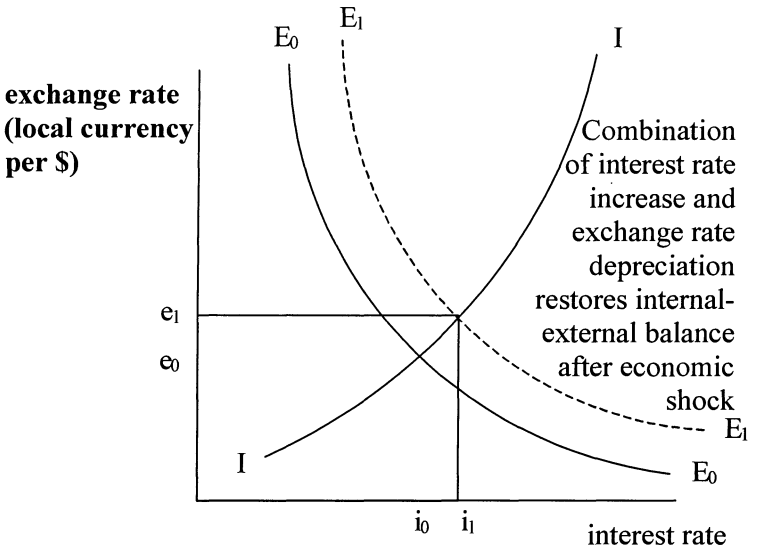

Figure 1a

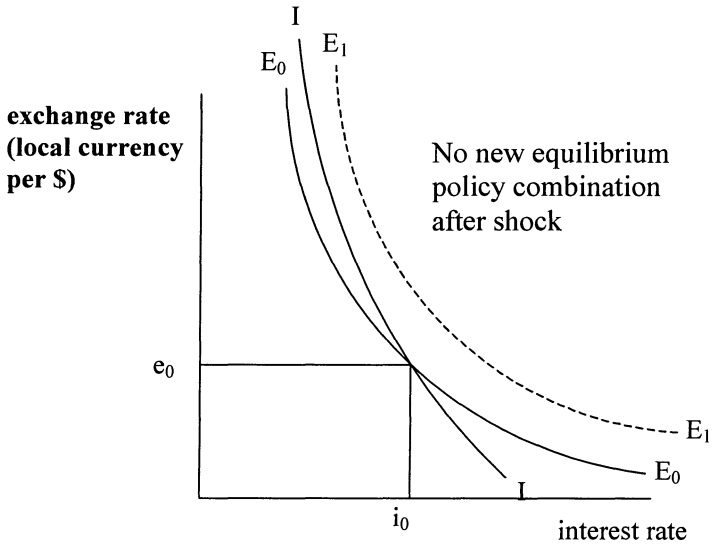

Figure 1b

The result of such a downward-sloping internal-balance curve, illustrated in Figure 1b, may be that, once an economy is shocked out of a position of internal and external balance, it may find it impossible to return to such a position, even if the exchange-rate is available as a policy instrument. The system is inherently unstable. Even more startling is the possibility that such a cycle could occur even in the absence of an economic or policy shock, if something occurs that alters investors', or speculators', expectations regarding the credibility of the government's commitment to maintain the exchange-rate peg. In recent experience, such a process appears to have been set off simply by an exchange-rate crisis in a neighboring country, the "contagion" phenomenon.

The possibility of such an unstable cycle of events suggests that, in the absence of robust financial institutions and an effective system of prudential regulation and supervisory mechanisms, the "impossible trinity" (that a country has to give up one of the following: free capital mobility, a fixed exchange rate, or a monetary policy oriented toward domestic goals) may become even more restrictive. That is, even exchange-rate flexibility may not assure autonomy of monetary policy in the face of free and high capital mobility.

In such a situation, a developing economy that lacks the systems and institutions listed in the preceding paragraph may face a choice between restrictions on capital movements and commitment to some credibility-enhancing but very rigid form of exchange-rate arrangement, such as a currency board or, even more extreme, dollarization of the economy or a full currency union. Argentina is an example of the first arrangement, Ecuador of the second, and the Western European member countries of the European Monetary Union (EMU) of the third. The price of adherence to such an arrangement is, of course, the total abandonment of monetary policy as a tool of domestic economic stabilization.[10]

5. PRIVATE GOODS, COLLECTIVE GOODS, AND OPTIMUM CURRENCY AREAS

Economists have long struggled to define the characteristics of an optimum currency area, the geographical boundaries within which the welfare costs of giving up (in the case of monetary policy) or severely restricting (in the case of fiscal policy) the independent use of macro-economic stabilization policies are low compared with the benefits of permanently eliminating the costs of exchange-rate variability and its associated risks. The difficulty of defining such a set of characteristics is highlighted by what I have called elsewhere the Mundell-McKinnon paradox (Whitman 1972, pp. 366-369). Mundell (1961) defines an optimum currency

area as one characterized by a high degree of labor mobility, occupational as well as geographical (Kenen 1969, p.44). McKinnon (1963) defines it as an economic area sufficiently large and self-contained to permit true autonomy of monetary policy when the exchange rate with the outside world is permitted to vary in response to economic shocks.

Each of these criteria rests on the internal logic of a simple model whose underlying logic, considered separately, seems plausible. But they are inherently contradictory: a region small and economically homogenous enough to provide the degree of labor mobility required by Mundell is almost certain to be so open, in the sense that domestic prices and money wages depend heavily on import prices. In this case, a change in the exchange rate will undermine domestic price stability, thus contradicting the McKinnon criterion. Later elaborations of the open-economy macro-model have failed to resolve this fundamental paradox.[11]

The kinds of problems confronted by a currency union that fails to meet one or another of these criteria is illustrated by the issues currently surrounding the conduct of monetary policy in the EMU. Stubbornly high unemployment in some of the larger member countries, particularly Germany, suggests the need for monetary ease, while inflationary pressures in others, such as Ireland and Portugal, together with the persistent weakness of the Euro, militate against it. Such problems are predictable, given the very low degree of labor mobility, both geographical and occupational, not only between but even within EMU member countries; the EMU is clearly not an optimum currency area by the Mundell factor-mobility criterion. The strong political commitment to the maintenance of the Union, combined with the fact that it is already well-advanced, make its breakup highly unlikely, but the difficulties confronting the European central bank (ECB) are not likely to attenuate, absent significant structural changes, including above all a substantial increase in labor mobility.[12]

Where, then, does all this leave us as regards the implications of advances in the open-economy macro-model for the conduct of economic stabilization policies and the evaluation of different exchange-rate regimes at either the national or the supra-national levels? A dilemma arises because, for private transactions, a simple answer is provided by the efficiency implications of pure trade theory. For private markets in both goods and factors of production, friction-creating differences in national policies and fluctuations in exchange rates represent welfare-reducing distortions; the optimum currency area is the world.

The economic justification for national economic sovereignty, then, lies in the existence of public or collective goods, such as low inflation, high employment, income distribution, and environmental purity, and of differences in the relative costs of such goods in different countries and/or differences in the consumption preferences for such goods among their

citizens. The greater the divergence among countries with respect to policy preferences and "possibility surfaces" for such public goods, the greater will be the welfare costs of international economic integration in the sphere of such goods that must be set off against the efficiency gains from integration of private markets (Whitman 1972, pp. 379-381). Such divergences underlie the ongoing political resistance to and social backlash against the strong pressures for policy and regulatory convergence engendered by economic globalization.

The enormous real-world impact of the tensions just described, between the private-goods market and the public-goods market criteria for policy convergence and the definition of an optimum currency area, and among different countries as regards their trade-offs among different public goods, indicates the desirability and urgency of economic models that can shed new and more rigorous light on these issues. Obstfeld assures us that stochastic versions of the new open-economy macro-model hold considerable promise of being able to do just that. Together with additional empirical evidence on the impact of exchange-rate volatility on allocational efficiency and economic growth,[13] such advances in modeling may help to elevate the level of debate on these issues from the shouting of slogans in the streets to a better-informed, more rational, and ultimately more socially useful discussion.

ENDNOTES

[1] For details, see Kenen (1985), Frenkel and Mussa (1985), and Obstfeld and Rogoff (1995).

[2] In Whitman (1975) I distinguished between the "hard" and the "soft" versions of this approach, calling the first "global monetarism" and the second the "monetary approach to the balance of payments." The very brief summary offered here incorporates the more extreme assumptions of the "hard" version.

[3] For an interesting example of such a stochastic model that yields a welfare ranking of different exchange-rate regimes, see Obstfeld and Rogoff (2000).

[4] Bodner and Gebhardt (1998) find that more firms hedge cash flow than accounting earnings in the United States, while the opposite is true for firms in Germany.

[5] In addition, the rules established by the Financial Accounting Standards Board (FASB 133 and 138) for accounting for gains and losses on the financial instruments used for hedging tend to make firms cautious in their use of such instruments.

[6] Over the past 12 months or so there have been a number of press accounts, particularly in the Financial Times, of firms contemplating a shift of planned

expansions or new investments from England to the Continent, because of the perceived overvaluation of the pound sterling relative to the Euro.

[7] There is mounting evidence also that firms' pass-through of exchange-rate changes into price changes in foreign markets is far from complete, implying pricing-to-market and variations in price-cost margins. See, for example, Rangan and Lawrence (1999), ch. 2.

[8] Ivanov and Whitman (2000) and references cited there. For a contrary view as regards US exports, see Glick and Wilborg (1997).

[9] This point was the core of Milton Friedman's (1953) classic argument for freely floating exchange rates.

[10] Rodrik (1997) argues that high capital mobility also limits autonomy of fiscal policy. This is because, if capital can move freely from one country to another, national governments will be competitively constrained in their ability to tax it, forcing a choice between reduced spending and imposing a larger share of the tax burden on relatively-immobile labor. This argument is most telling in a credibly fixed-rate environment, where moving capital from one country to another entails no foreign-exchange risk. In fact, the "stability pact" agreed to by member countries of the EMU as a requirement for admission explicitly restricts the use of fiscal policy by constraining their fiscal deficits to no more than three percent of GDP.

[11] The United States springs immediately to mind as a counter-example to the paradox. But two points must be noted. First, the United States is characterized by a uniquely high degree of labor mobility. And, second, the federal tax structure automatically generates equilibrating changes in the regional allocation of tax revenues and expenditure outlays when different regions of the country experience different exogenous shocks.

[12] Inter-country mobility is constrained by language and culture, but also by some institutional differences. For example, individuals' pension contributions must be made from after-tax income but are tax-free upon distribution in some member countries, while in others they may be made from before-tax income but are taxed upon distribution. Thus, an individual who moves from one member country to another may be taxed twice or not at all.

[13] The Conference Board and the Group of 30 are currently conducting a survey of some 2000 firms worldwide, focusing on the impact of exchange-rate volatility on their business and their responses to it. The aim is to glean a better understanding of the effects of such volatility at the level of the firm.

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Discussion

Marina v.N. Whitman's

THE OPEN ECONOMY MACROMODEL: INTERACTIONS BETWEEN THEORETICAL DEVELOPMENTS AND REAL-WORLD BEHAVIOR

by M. June Flanders
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This paper does not leave much room for comments, since it sums up very nicely what has been going on in the field of international macro for the last few decades. The author speaks with the rare authority of an academic scribbler who has stared a multinational corporations portfolio in the face. A few minor comments will have to suffice, most of them reinforcements of points made in the paper rather than dissent.

Whitman compares the MABP with the Mundell-Fleming, Keynesian analysis. She implies it was not much of a revolution since Hume had something similar; but this makes it indeed a revolution, the wheel having turned – revolved – around to David Hume again – and Thornton and Ricardo. We might ask why the monetary, asset-adjustment view of the world, initiated by Hume and basically unchallenged through the 19th century, suddenly died out in the interwar years of the 20th century. The reason, I suggest, was that even when exchange rates were pegged during the latter period, they were far from fixed, and that, from the end of WWI, the non-sterilization assumption was basically no longer valid.

The later stampede into protectionism of all kinds put the final peg in the coffin of this approach by repealing the law of one price, not to mention the more rigorously demanding assumption of purchasing power parity. To repeat, exchange rates in the interwar period were pegged, but they were far from fixed. And the variability of real exchange rates was most surely high. I am reminded here of Hayek's 1936 attack on what he called 'monetary nationalism,' that is, flexible exchange rates or, more frequently, adjustable pegs. He said it was a pity the gold standard – 'monetary internationalism'

had been rejected without ever having really been tried. By this he meant that domestic money supplies were never permitted to vary as they would have had all money consisted of gold alone.

But the variability of flexible rates needs to be compared with other risks. Under the Bretton Woods regime of pegged exchange rates, exchange rate risk was often replaced by risk or uncertainty regarding the ability to repatriate profits earned abroad and similar restrictions on the activity of international firms. I wonder if economic historians could tell a story of increased liberalization of capital movements and particularly trade in financial assets being important stimuli to the activity of corporations across borders, which encouraged growth in the size of these corporations and hence the need for transfer of assets across borders. The erection of a common tariff wall around the EEC countries provided an additional incentive to international investment. This internationalization of management took place in a period during which the percentage of world output – and trade – accounted for by homogeneous commodities traded in highly competitive markets was steadily decreasing and replaced by output of differentiated products, oligopolistic markets, brand identification, cross-shipment of intermediate goods, consolidation of firms, intra-industry trade, and with all of these, of course, pricing to market. I am suggesting that pricing to market and the activity of large international firms was the result of a number of different stimuli occurring simultaneously.

Some pricing to market was, of course, recognized earlier, though it was not so called, and was undoubtedly less widespread. Then it was explained in terms of elasticities. As an example, after the very large devaluation of 1949, Britain immediately raised the price of Scotch whisky in the US by the same proportion. The argument was that the elasticity of demand facing the British exporter was extremely low, since the price of a fifth of scotch landed in New York was $1.00 – the rest of the retail price in the US consisted of taxes and transport and other distribution costs.

True, real exchange rate volatility makes the task of money managers more complicated and risky. But if nominal exchange rates are fixed, or even pegged for long periods of time, large and irregularly timed movements of capital and earnings can make the task of the manager of international reserves much trickier; variations in real exchange rates can affect real output and expenditure, and trade flows, in an erratic manner.

I submit that one major reason for the widespread disappointment with floating exchange rates was excessively optimistic expectations as to what benefit the system would yield. (I predicted in 1973 that there would be disappointment because we were expecting too much.) The early arguments for flexible rates, Friedman's, Meade's, and later others, focused completely, as Whitman notes, on the current account, arguing that if exchange rates were free to move, the current account would always be in balance. The

responsiveness of capital movements to monetary policy (taken for granted in the pre-WWI literature) was essentially ignored in the early post WWI literature on the advantages of floating rates. Whitman says: interdependence persists in a world of flexible exchange rates: Most assuredly. This is what we learned from the Mundell-Fleming innovations.

Let us remember what the mood and expectations were in the 1950s. The interwar period (the truce in the 30 years' war) was characterized by speculative, destabilizing capital movements motivated heavily by political uncertainty and fear of war and/or expropriation, as well as the justified fear of collapse of the gold standard and of fixed exchange rates. Keynes, in his working proposals in preparation for the Bretton Woods meetings, was highly suspicious and fearful of capital movements and their power to destabilize (even suggesting at one point that countries experiencing uninterrupted capital inflow would have, at some point, to give them up – or give them back!). The IMF articles of agreement, as we know, did not discourage controls on capital accounts. When I was a student my professors were often exercised over the question of how, if ever, the world could be restored to the halcyon days before the First Great War when private capital movements between countries, the kind that equalized returns on real capital, were the norm – the general expectation in the 1950s was that this day would probably never come, and certainly not soon. In such a world, to adjust the whole real economy to one price, the exchange rate, seemed foolish; the alternative, adjusting that one price to the real economy and its relations with other real economies, seemed much more sensible and attractive. That was certainly the Friedman argument. Now, by the time the float actually came, the Mundell-Fleming model was in the journals, but not in the textbooks. I submit that the issues had not been internalized into the weltanschauung of the profession – hence the over optimistic expectations as to what floating would bring

I confess that I have always been somewhat bemused by the disenchantment with floating rates. I have suggested that it stems primarily from excessive expectations as to the benefits that might be derived from them. As Marina says, when the emphasis was on the current account alone, it was expected that "exchange rate flexibility could buffer the domestic economy from real disturbances originating abroad." This is the burden of Friedman's argument (1953). And the following sentence must be added: when one has to deal with the current account *and* endogenous capital movements *and* internal policy concerned with both inflation and unemployment rates – then exchange rate flexibility could not provide a buffer. Period.

To me, the moral of all this is that there really is no buffer – the world is inter-related and no man is an island unto himself, as the poet said. Again, to

cite the paper, "if full insulation is a chimera so too is full autonomy of domestic economic policies."

On optimum currency areas and fixed exchange rates, I find myself substantially in agreement with the comments in the paper, but there is one comment in a footnote which I should like to see transferred into the body of the paper – in bold type. And it is to emphasize the importance of inter-regional fiscal transfers to the success of a currency area. As has been noted in other sessions, this is of crucial importance – and often neglected – comparisons of the US and Euroland as optimum currency areas.

Finally, when we compare the present to some imagined 'good old days' we need to remember, among other things, that the only explicit policy goal of the monetary authority under the pre WWI gold standard was to maintain the convertibility – or integrity – of the currency. So it is not surprising, to quote the paper that "the price of adherence to ... [a currency board or dollarization] is the total abandonment of monetary policy as a tool of domestic economic stabilization." The point of dollarization (or its near cousin, the currency board) is peg your inflation rate to that of the "pegee". This was the motive that led Milton Friedman, when he visited here in the early 1970s, to recommend that Israel dollarize; and this is, of course, what is being discussed hotly today in places as distant from one another as Argentina and Hong Kong.

Part III

Future

Alternate Models
and
Institutional Structures

Chapter 10

ASSET PRICES, THE REAL EXCHANGE RATE, AND UNEMPLOYMENT IN A SMALL OPEN ECONOMY: A MEDIUM-RUN STRUCTURALIST PERSPECTIVE

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1. INTRODUCTION

The second half of the nineties saw a number of industrial economies experiencing a steady decline in the rate of unemployment and real exchange rate appreciation together with a stock market boom, brought about by anticipation of higher productivity fueling an increased future need for capital, unaccompanied by rising inflation (Phelps and Zoega, 2001). How well does the open-economy Keynesian model (Mundell, 1962, 1963) explain this phenomenon? In the small open economy version of this model with a given external real rate of interest under freely fluctuating exchange rates and perfect international capital mobility, the stock market boom increases both investment and consumer spending, thus aggregate demand. The expanded demand, however, puts an upward pressure on the domestic interest rate, which leads to a massive inflow of capital and consequently a real exchange rate appreciation. The result is that export demand is fully crowded out so as to leave output and employment unchanged. In a large open economy, the increased aggregate demand pushes up the world interest rate so that the

higher velocity of money pulls up domestic output and employment (above the natural level), creating inflationary pressures.

In this paper (as well as in Hoon and Phelps, 2001), we explore non-monetary channels through which the rise in asset prices and the accompanying real exchange rate appreciation produce shifts in the natural rate path, even in a small open economy where the external real rate of interest is unaffected by the shock under study. In our earlier paper, we studied a customer market model where the underlying domestic asset is the firm's stock of customers, and the Law of One Price fails because of imperfect information regarding prices of similar or identical goods overseas. With the valuation of an additional customer increased due to an anticipated future step-increase in the level of productivity, firms are willing to reduce their current mark-ups. With the price reduced as a ratio to unit cost, each firm's real demand wage is increased accordingly, so employment is expanded. Moreover, with domestic firms facing an internationally more competitive environment, they are induced to reduce their markups even further so as to prevent the erosion of their customer base to foreign suppliers. Overall, employment expands without producing inflationary pressures.

Here, we shall explore a different, yet complementary, channel through which a rise in asset prices and real exchange rate appreciation lead to an expansion of employment without raising inflation. The failure of the Law of One Price is due to the Balassa-Harrod-Samuleson assumption of a non-tradable sector, which we treat as the capital-goods producing sector, lying alongside the tradable sector. Following the empirical literature (see Obstfeld and Rogoff, 1996), we suppose that the non-traded good sector is relatively labor intensive. When the stock market boom occurs, there is an increased demand for investment goods. However, the presence of external costs of adjustment, which we model by introducing the classic two-sector structure, means that there is an upward-sloping supply curve of capital good. (Goolsbee, 1997, presents empirical evidence in support of the existence of a positively-sloped supply curve of capital goods. He finds that a 10 percent investment tax credit increases equipment prices 3.5 to 7.0 percent. This lasts several years and is largest for assets with large order backlogs or low import competition. Capital goods workers' wages also rise. The increased demand for the investment good is, therefore, not fully met by increased supply, prompting a rise in the relative price of the non-traded capital good, and hence a real exchange rate appreciation. As the investment good sector is also the relatively labor-intensive one, there is an implied rise in the real demand wage, and a decline in equilibrium unemployment.

Our model can also be applied to study other shocks. A particularly striking example of the distinctive mechanism that we emphasize comes from contrasting our model's prediction about the effects of a rise in the external

rate of interest to the prediction of the Mundell-Fleming model. Blanchard, in commenting on Fitoussi, Jestaz, Phelps and Zoega (2000), stresses that there has been a convergence in the views of a large number of economists regarding the common set of economic shocks that produced the great slump of Europe. In particular, it is now widely accepted that a rise in the world real interest rate in the eighties has contributed to a rise in European unemployment. Yet, according to the Mundell-Fleming model, an increase in the external real interest rate leads to a real exchange rate depreciation for the small open economy, thus stimulating export demand and hence expanding output and employment. (As a matter of fact, the neoclassical theory of business cycle fluctuations that relies on the intertemporal substitution of leisure mechanism to explain employment fluctuations would also predict that a rise in the external real rate of interest is expansionary. See Faria and León-Ledesma, 2000.) In our present model, the rise in the external real interest rate causes a fall in asset prices as managers apply a higher discount rate to evaluate the stream of prospective profits. The implied decline in investment spending leads to a movement down the capital-goods supply curve, with a consequent fall in the relative price of capital, a real exchange rate depreciation, and a decrease in the real demand wage. Given the wage curve, equilibrium employment declines.

Another shock we study in this paper is the adoption of investment tax credits, such as under Ronald Reagan in the first half of the eighties. We show that in our model economy, investment subsidies act to raise the relative price of capital, produce a real exchange rate appreciation, and both increase wages as well as expand equilibrium employment. In the rest of the paper, we first develop the basic model, and then apply it to study the anticipation of a future step-level increase in productivity, an increase in the external real rate of interest, and an introduction of investment tax credits.

2. THE BASIC MODEL

There are two goods in the economy, one a tradable consumption good and another a non-tradable capital good. For simplicity, the production of the capital good requires only labor, so capital is demanded as an input solely by the consumption good sector. There is perfect labor mobility across the two sectors. The production function of the capital good is given by $z_N = \varepsilon L_N$, where z_N is the output supplied of the capital good, L_N is the number of workers employed in the capital goods producing sector, and ε is an effort function whose arguments we specify later. Profit maximization by capital goods producing firms leads to

$$v^d = \varepsilon p_N \qquad (1)$$

where v is the real wage measured in terms of the consumption good, our numeraire, and p_N is the relative price of the capital good. (The superscript "d" denotes the real demand wage.) Note that p_N is also the real exchange rate.

The production function of the tradable good, a pure consumption good, exhibits constant returns to scale and is given by $z_T = A_T F(K, \varepsilon L_T)$, where z_T is the domestic output of the consumption good, K is the stock of capital, L_T is the number of workers employed in the consumption goods producing sector, and A_T is a measure of Hicks-neutral technical progress. Competitive hiring of workers leads to

$$v^d = \varepsilon A_T [f(K/\varepsilon L_T) - (K/\varepsilon L_T) f'(K/\varepsilon L_T)] \qquad (2)$$

where $f'(K/\varepsilon L_T) > 0$ and $f''(K/\varepsilon L_T) < 0$. We suppose that there is an installation cost incurred in making capital operational in the consumption goods sector, given by C(I), with C'(I) > 0 and C''(I) > 0. For simplicity, we assume a quadratic cost function so $C(I) = hI^2/2, h > 0$. Taking the external real rate of interest as given, perfect international capital mobility leads to $r = r^*$, a parameter. Solving the firm's optimization problem leads to the following pair of equations:

$$I^d = (q - p_N)/h \qquad (3)$$

$$(r^* + \delta)q = A_T f'(K/\varepsilon L_T) + (dq/dt) \qquad (4)$$

where q is the shadow price of capital, and I^d is investment demand. We note from (3) that, given q, investment demand is decreasing in p_N. An increase in q shifts out the investment demand schedule. Equating (1) and (2), we note that $K/\varepsilon L_T$ is a positive function of p_N/A_T, that is, $K/\varepsilon L_T = \phi(p_N/A_T), \phi'(p_N/A_T) > 0$. Substituting this result in (4), we get

$$(r^* + \delta)q = A_T f'(\phi(p_N/A_T)) + (dq/dt) \qquad (5)$$

Let the fixed size of the labor force be given by L. Then the size of the employed workforce is given by $(1-u)L$, where u is the rate of unemployment. We can express the output supply of the capital good as:

$$z_N = \varepsilon(1-u)L - [K/\phi(p_N/A_T)] \qquad (6)$$

To determine the equilibrium rate of unemployment, we draw upon a shirking formulation of the labor market (Phelps, 1994). Each firm in the economy is assumed to choose a wage policy so as to minimize the effective cost, v/ε,

where the effort function depends negatively on its two arguments: z/v and y^w / v. Here, z is the wage expected elsewhere, which we take to be equal to $(1-u)v^e$, and y^w is the nonwage income, which we take as fixed for a medium-run analysis. Cost minimization by choice of an optimal supply wage yields the generalized Solow elasticity condition:

$$1 = -\left[(\varepsilon_1 / \varepsilon)(z/v) + (\varepsilon_2 / \varepsilon)(y^w / v)\right] \qquad (7)$$

Noting that under a consistent expectations equilibrium, $v = v^e$, using the identity $z \equiv (1-u)v^e$, and treating y^w as fixed, we make the supply wage an increasing function of 1–u, that is, $v^s = V^s(1-u; y^w)$, $V^s_{1-u} > 0$. An increase in nonwage income raises the supply wage at any given employment rate. Note from (7) that, in equilibrium, we have the following restrictions on the partial elasticities: $0 < -(\varepsilon_1 / \varepsilon)(1-u) < 1$ and $0 < -(\varepsilon_2 / \varepsilon)(y^w / v) < 1$. In the Marshallian employment–real wage plane, the wage curve is upward sloping. To depict the demand wage curve, we note from (1) that given p_N, the demand wage declines as 1-u increases:

$$\frac{dV^d}{d(1-u)} = p_N \varepsilon_1 / \left[1 + (\varepsilon_2 / \varepsilon)(y^w / v)\right] < 0 \qquad (8)$$

since around the equilibrium, $0 < -(\varepsilon_2 / \varepsilon)(y^w / v) < 1$, and $\varepsilon_1 < 1$. The intuition is that as the labor market tightens, workers' work effort declines since they can more readily find alternative employment elsewhere in the event that they are caught shirking and are fired. So the demand wage curve is downward sloping in the Marshallian employment–real wage plane. Juxtaposed against the equilibrium wage curve, the intersection gives the pair of equilibrium wage and employment rate. An increase in the relative price of the capital good, equivalently a real exchange rate appreciation, shifts up the demand wage curve along the given wage curve, and so raises both the real wage as well as the equilibrium employment. (It would seem from (2) that at given 1-u, the real demand wage depends on both p_N and A_T. However, since workers are freely mobile across the two sectors, an increase in A_T would prompt an influx of workers into the tradable sector at given p_N, thus lowering $K / \varepsilon L_T$ sufficiently to make the labor value marginal product unchanged at given p_N.) We can write the demand wage as a decreasing function of 1–u, given p_N, that is, $v^d = V^d(1-u; p_N)$, $v^d_{1-u} < 0$. Equating

$V^s = (1-u; y^w)$ to $V^d(1-u; p_N)$, we can simply write $1-u = \mu(p_N; y^w)$, with 1–u increasing in p_N, given y^w.

We see that when a real exchange rate appreciation occurs, equilibrium employment is increased and the real wage rises. In our shirking model, the tighter labor market condition can lead to less work effort being exerted as workers reckon that they can more readily find alternative employment elsewhere should they be caught shirking and be fired. If, however, we suppose that the reduced work effort on account of better employment opportunities does not paradoxically cause the total *effective* workforce to decline, then $\varepsilon(1-u)L$ will be an increasing function of p_N. Using this result in (6), we obtain a reduced form expression for the output supply of the capital good:

$$z_N = Z_N(p_N, K; A_T) \tag{9}$$

where the output supply of the capital good increases in p_N, and decreases in K and A_T.

Equating investment demand given by (3) to the output supply of the capital good given by (9), $I^d = Z_N$:

$$(q - p_N)/h = Z_N(p_N, K; A_T) \tag{10}$$

so q is an increasing function of p_N, and a decreasing function of K and A_T, $q = \psi(p_N, K; A_T)$. Alternatively, p_N is an increasing function of q, K and A_T, $p_N = \omega(q, K; A_T)$.

The key dynamics of our model can now be represented by the following pair of equations:

$$dK/dt = Z_N(p_N, K; A_T) - \delta K \tag{11}$$

$$\psi_1(dp_N/dt) = (r^* + \delta)\psi(p_N, K; A_T) - A_T f'(\phi(p_N/A_T)) - \psi_2[Z_N(p_N, K; A_T) - \delta K] \tag{12}$$

where $\psi_1 > 0$, and $\psi_2 < 0$,. We can check readily that the stationary locus for dK/dt = 0 is positively sloped, with a gradient given by

$$dp_N/dK|_{KK} = [\delta - \partial Z_N/\partial K]/(\partial Z_N/\partial p_N) > 0 \tag{13}$$

The stationary locus for $dp_N/dt = 0$ is also positively sloped, with a gradient given by

$$\frac{dp_N}{dK\big|_{pp}} = \frac{[\delta - \partial Z_N/\partial K] + (r^* + \delta)}{\partial Z_N/\partial p_N + (f'\phi'/\psi_2) - ((r^* + \delta)\psi_1/\psi_2)} > 0 \qquad (14)$$

noting that $f'' < 0, \phi' > 0, \psi_1 > 0$, and $\psi_2 < 0$. For a sufficiently low $r^*, dp_N/dK\big|_{pp} < dp_N/dK\big|_{KK}$, and we obtain saddle-path stability, with the unique saddle path being positively sloped and having a smaller gradient than the two stationary loci. The phase diagram is shown in Figure 1.

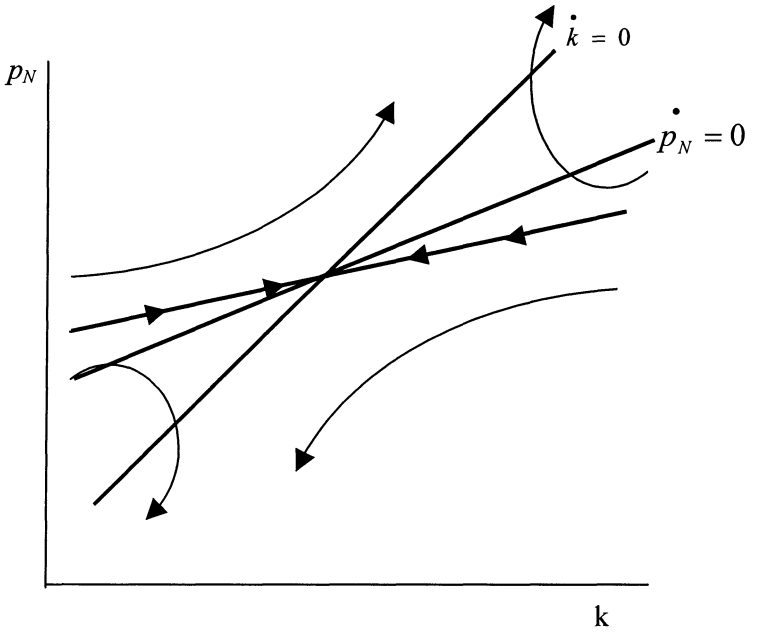

Figure 1. Phase diagram in (k,p_N) plane

We note that it is also possible to develop a phase diagram in the (K, q) plane representing the following pair of equations:

$$dK/dt = Z_N(\omega(q, K; A_T), K; A_T) - \delta K \qquad (15)$$

$$dq/dt = (r^* + \delta)q - A_T f'(\phi(\omega(q, K; A_T)/A_T)) \qquad (16)$$

The slope of the K-stationary locus is positive, while the q-stationary locus is negatively sloped:

$$dq/dK\big|_{KK} = \left[\delta - (1 + h\partial Z_N/\partial p_N)^{-1}\partial Z_N/\partial K\right]/(\omega_1 \partial Z_N/\partial p_N) > 0$$

$$dq/dK\big|_{qq} = \omega_2 f''\phi'/[(r^* + \delta) - \omega_1 f''\phi'] < 0$$

where $\omega_1 > 0$ and $\omega_2 > 0$. We obtain a negatively-sloped unique saddle path (see Figure 2).

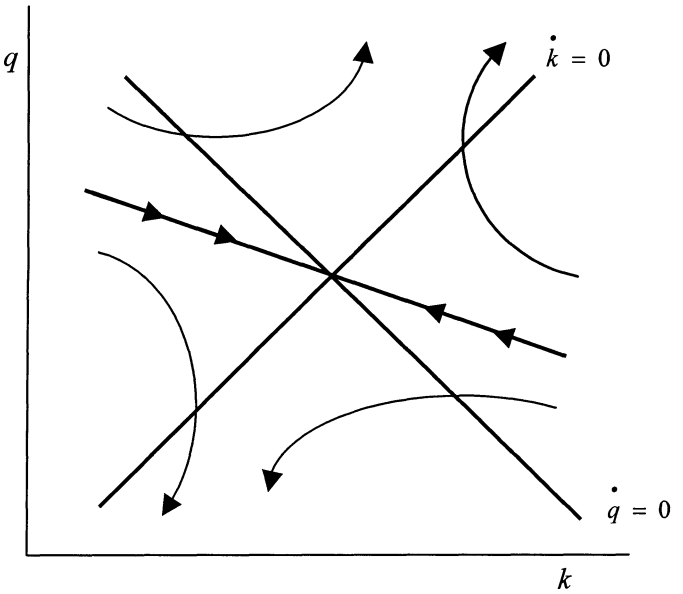

Figure 2. Phase diagram in *(k,q)* plane

3. ANALYSIS OF SHOCKS

3.1 An anticipation of a future step-increase in A_T

Suppose that at the current moment, t_0, economic agents form an expectation that at some point in the future, t_1, there will be a step increase in A_T. In the phase diagram in the (K, p_N) plane, the stationary locus for dK/dt = 0 shifts to the left as the output supply of the capital good is reduced

by the increase in A_T, as labor is drawn into the tradable sector, necessitating an increase in p_N to replace depreciation at any K. We can also check that the stationary locus for $dp_N/dt = 0$ is shifted leftwards, hence upwards. Hence on impact, there is an upward jump of p_N, which can be explained as follows: With prospects of a higher stream of profits in the future brought about by better technology raising the productivity of capital, there is an upward jump of current q, which stimulates investment demand. As the supply of capital is not perfectly elastic, there is an upward pressure on the relative price of the capital good, which being relatively labor intensive, pulls up the demand wage along the given wage curve, and being nontradable, leads to a real exchange rate appreciation. The temporarily depressed rental requires an expectation of capital gains so q and p_N continue to rise between t_0 and t_1. It is clear that when the technology improvement occurs at t_1, q cannot jump at that point. So it is p_N that must rise at that point to reconcile the investment demand to the reduced supply of the capital good as workers are released from the capital goods producing sector to the consumer good sector. Although the relative price of the capital good is unambiguously increased in the new steady state, there are two possible paths p_N could take to reach that steady state: a monotonic increase in the one case, incorporating the jump at t_1, and an overshooting above the steady-state p_N in the other case.

3.2 A rise in the external real rate of interest

An increase in r* leads to a downward shift of the $dp_N/dt = 0$ stationary locus along the unshifted $dK/dt = 0$ locus in Figure 1. There is an immediate drop of p_N followed by a steady decline to reach a permanently lower level. The intuition is that the higher discount rate applied by managers to evaluate prospective profits causes a fall in q, which contracts investment demand. Given an upward-sloping supply curve for capital, there is a fall in the relative price of capital, which reduces the demand wage and consequently equilibrium employment contracts.

3.3 An introduction of an investment tax credit

The introduction of an investment tax credit, say at the rate of s, and financed by a lump-sum tax, makes the relative price of capital faced by the consumer good firm equal to $(1 - s)p_N$. Equation (3) is now amended to

$$I^d = [q - (1-s)p_N]/h \qquad (3')$$

while (10) is amended to

$$[q - (1-s)p_N]/h = Z_N(pN, K; A_T) \qquad (10')$$

so q is an increasing function of, and a decreasing function of K, s, and A_T, $q = \psi(p_N, K; A_T, s)$. The introduction of an investment tax credit, therefore, leads to an upward shift of the $dp_N/dt = 0$ stationary locus along the unshifted $dK/dt = 0$ locus in Figure 1. The stimulus to investment demand leads to a rise in the relative price of capital, a real appreciation, and an expansion of equilibrium employment.

4. CONCLUDING REMARKS

In this paper, we have drawn together elements of an incentive-wage labor market and an assets view of labor demand to show how various shocks in the international economy can explain some historical episodes that we argue the Keynesian paradigm cannot adequately explain. In our theory, perceptions of a bright future lead to a rise in share prices, which in turn stimulate employment without causing inflationary pressures. There are various assets that firms are then induced to invest in: the stock of customers both at home and overseas, trained employees who need firm-specific training to be fully functional, and fixed capital. In this paper, our emphasis has been on the third kind of capital–equipment and structures. We combine internal and external adjustment costs to generate an explicit firm investment demand function as well as an upward-sloping supply curve of capital. The result is a tractable model that can be used to generate useful insights into the general-equilibrium workings of an economy in response various economic shocks, highlighting the role of asset prices and the real exchange rate in determining labor market outcomes.

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Discussion

Hian Teck Hoon and Edmund S. Phelps's

ASSET PRICES, THE REAL EXCHANGE RATE, AND UNEMPLOYMENT IN A SMALL OPEN ECONOMY: A MEDIUM-RUN STRUCTURALIST PERSPECTIVE

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The goal of this paper is to investigate some aspects of the macro relationship between shocks, the real exchange rate and unemployment. While the standard Keynesian IS-LM-BP model would show that an increase in world real interest rate leads to depreciation in the exchange rate and no consequences for output and employment, the model presented shows that an increase in world realinterest rate leads to depreciation and to unemployment, a unique result indeed!

The underlying intuition of the model is that higher world interest rate leads to a fall in asset prices due to a higher discount rate, which implies a decline in investment. Since the model assumes a cost for immediately increasing the capital stock, as a result, the price of capital increases with the supply of capital.

In consequence the decline in investment leads to a fall in the relative price of capital. However since the authors assume that capital is a non-traded good, this then leads to a real depreciation and therefore a decrease in wage demands. Since the authors' assume unemployment is not Keynesian but due to shirking, this will lead to a decline in employment.

There are two main assumptions that may be problematic when trying to apply the results of the model they present. The first is their assumption that capital goods are non-traded. In reality, capital goods are either exports or imports. The second is their assumption that non-traded goods are more labor intensive. This is a workable assumption when the non-traded sectors are made up of service industries, but not necessarily when it is assumed that they are made up of capital goods industries which by definition are more

capital intensive and good intensive. One way to extend the model and try to gauge it against the stylized facts as presented by the authors would be to assume that capital goods are traded and are capital intensive or human capital intensive, but not labor intensive, such as exemplified by service industries.

Chapter 11

DO WE NEED A REFORM OF THE INTERNATIONAL MONETARY INSTITUTIONS AFTER THE ASIAN CRISES? SOME PRELIMINARY SUGGESTIONS USING CONSTITUTIONAL ECONOMICS

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1. INTRODUCTION

After the Asian Crises, a new situation has arisen for possible intervention of international financial institutions – especially due to the severe criticisms by many economists, politicians and other public officials, in which they pointed out the ineffective or even counter-productive interventions of the IMF (regardless of whether such a criticism can be justified or not). In addition, many voices have been raised to the effect that the IMF should either be abolished, or be given more effective and powerful means in order to intervene in future difficulties.

The International Monetary Institutions (i.e., the IMF and the World Bank) will thus face new challenges and should react to this. We deal with these challenges in part 2 of the paper. In part 3 of the paper, some theoretical ideas are put forward about how a new international monetary institution should operate. With the help of constitutional economics it will be shown how such a monetary institution would look in order to operate much more efficiently and react in a more timely manner to major financial economic crises like the Asian one. In part 4 of the paper, some elements of a "new" institutional design of an international monetary system are developed, in which a new structure will be derived, that is to say, what its major tasks

should be and how this "reformed" institution should operate. Part 5 gives a summary of the main results and draws some conclusions.

2. THE DIFFICULTIES OF CRISIS PREVENTION BY INTERNATIONAL MONETARY INSTITUTIONS IN THE STATUS QUO SITUATION

The financial and economic crises of Asia provide some of the best examples of an unexpected series of events, which had not been foreseen either by private rating agencies or by the international monetary organizations. The Asian financial and economic crises resulted in a contraction of output and employment, and in some countries poverty also rose sharply. Negative spillover effects have affected numerous other countries. As a consequence of this crisis, the growth in world output was projected at just 2.5% for 1999, about 2 percent below the projection made before the outbreak of the Asian crises – a loss of some US$ 800 billion in the year 1999 alone. The questions then arise: what can be done better in the future, and what can the international monetary institutions do? The latter question will be discussed – as an example – with respect to the reaction of the IMF, so far the only international monetary institution which has some experience in dealing with financial crises.

Over the past two decades, the IMF's surveillance has relied on indicators, especially in the periods between consolations and/or discussions, to monitor economic developments and to draw conclusions from their likely future trends. While crisis prevention is mentioned nowhere specifically as one of the IMF's main purposes,[1] there is an urgent need to undertake reforms so that the IMF can react more quickly and properly to events like the Asian crises. Thus, while the aims of the IMF are clearly more ambitious than mere crisis prevention, the latter can be said to be an indispensable prerequisite for the achievement of these objectives. Insofar as crises prevention should indeed be a core function of the IMF, surveillance should be the IMF's principle tool for crisis prevention. Hence it is no surprise that surveillance activities, broadly defined, absorb the largest share of the IMF's human resources. Surveillance over the funds of 182 member countries is, however, a continuous process, and the executive board meets about once a month in informal country sessions to facilitate early identification of emerging financial tensions by focusing on potential problems and providing additional empirical material on a selective basis. The staff informs management monthly on important country developments, but also on an ad hoc basis when necessary. Beyond the usually annual consultation visits, formal financial arrangements, precautionary arrangements, informal staff-monitored programs and enhanced surveillance provide additional channels for more

intensive contact between the staff and country authorities. The closer monitoring in the context of a quantitative framework that accompanies these modalities of the IMF's involvement tends to reassure interested third parties, such as donors, creditors and financial markets, and thereby can contribute to crisis prevention.[2]

It should be briefly mentioned that the IMF has also undertaken regional and multilateral surveillance. The former, which is becoming increasingly important in the surveillance of the European economies, complements bilateral surveillance in areas where policy responsibilities have been shifted to the supranational level. Executive board discussions of regional surveillance reports provide guidance to the staff in conducting bilateral surveillance with the countries affected. In the future, this is to be expected to increase with respect to monetary policy in the Euro area for consultation missions to both EMU participants and countries that have close links with the Euro area. The multilateral surveillance exercise provides valuable input for bilateral surveillance, e.g., in the form of projections for the growth of trading partner markets or market assessments of country financing prospects.

The eruption of the Mexican crisis in late 1994, and especially the outbreak of the Asian crises 21/2 years later, raised serious questions about the effectiveness of IMF surveillance. The issue of relevance today is not so much whether these crises could have been prevented. Of course, they could have been avoided through better economic policies or subsequently mitigated by the readiness on the part of the government in the countries in question to deal swiftly and decisively with the emerging panics.

If one examines the record of surveillance in the Asian region, the IMF appears to have been more aware of the risks in Thailand's economic policy course than were most market observers. In other cases in Asia, however, the IMF, while having identified critical weaknesses, in particular in the financial sector, had been taken by surprise, owing in part to lack of access to required information and also to an inability to see the full consequences of the combination of structural weaknesses in the economy and contagion effects.[3] In particular, in the case of Korea, the IMF did not attach sufficient urgency to the financial tensions that had begun to develop in early 1997.

From these short remarks about the ability of the IMF to react to severe economic and financial crises, it can be seen that there is a need either to undertake major reforms of the IMF, so that the IMF will be better able to fulfil its tasks, or to create a new international monetary institution.[4] Both steps require, however, much more far-reaching intervention rights than the existing ones. It will be shown with the help of constitutional economics that the new monetary institution will only be successful in handling financial crises, if it can (re)act (at least for a certain time span) like an independent central bank with the additional rights to discipline governments and other actors in those countries in crisis. This new monetary institution can only act

successfully if it is really independent; this means that no pressure from major donor countries can be put on it or that it might be misused as a lender of last resort. An attempt to develop such a framework will be undertaken in the next two parts of the paper.

3. SOME THEORETICAL CONSIDERATIONS ABOUT A NEW INTERNATIONAL MONETARY INSTITUTION

3.1 The economic and political independence of monetary institutions

The modern theory of financial institutions (like central banks or international monetary institutions) stresses the importance of the independence of these institutions and of the incentive structures of the decision makers responsible for monetary policy. According to Grilli, Masciandaro and Tabellini (1991), the monetary institution can be described by its political and economic independence. Economic independence is defined as the ability of the monetary institution to determine the use and choice of its monetary (and if necessary other) policy instruments to act autonomously and without interference from national governments (or donor countries) or international organizations.[5] Economic independence may be adversely affected by the monetary institution's obligations to finance national governments or to supervise commercial banks and by a lack of freedom to set interest rates.[6]

Political independence is defined as the ability of the monetary institution to choose monetary policy goals autonomously and without interference from a government (or donor countries). The basic determinants for this ability are found in personal independence e.g., procedures for appointing and dismissing the decisive managers of such an international monetary institution (and their terms of office), in the national government's rights (or international institution's rights) to give instructions to the international monetary institution as well as the right to veto, to suspend or to fire the top executives (of such international monetary institutions) in the case of problematic or damaging decisions.

The necessary precautions and arrangements for a "new" IMF are shown in Table 1.

Table 1: Institutional precautions/arrangements for a "new" IMF

Institutional arrangements	
1. Statute of the "new" IMF	1.1 Commitment to stable currencies 1.2 Commitment to price and fiscal stability 1.3 Independence of the "new" IMF from donor countries
2. No bail-out clause	
3. Fiscal convergence criteria (pre-fixed limits) of	3.1 Government currencies budget deficit 3.2 Government overall debt
4. Monetary structural convergence criteria	4.1 Inflation convergence 4.2 Long term interest rate convergence 4.3 Exchange rate stabilization

There are three areas of economic policy in which such an arrangement induces important institutional changes in the policy of the "new" IMF with respect to a country that wants help from the "new" IMF. These fields are:
1. the no bail-out clause,
2. monetary policy, and
3. fiscal policy.

1: No-Bail-out Clause
In most cases this new institutional arrangement prevents a bail-out situation, because the addressee (under the old situation the IMF or the donor countries) is not allowed to act as such by its statutes. Hence, the moral hazard problem of the IMF is drastically diminished, and if this no bail-out clause becomes credible, it might already have some effect in advance of the financial behavior of possible affected countries.

2: Monetary Policy
Here, the statute of the "new" IMF is of particular relevance. In order to minimize the inflation risk and a weak currency, the "new" IMF has been assigned a strong position. This can be seen in the following three areas:
(i) the commitment of the "new" IMF to price and currency stability as its main goal,
(ii) the institutional independence of the "new" IMF and independence of its employees, and
(iii) the strong influence, with the help of fiscal convergence criteria, on the state deficit financing of countries.

3: Fiscal Policy:
In the fiscal policy area, two aspects are important:
(i) the "no bail-out" clause, and
(ii) a country-specific set up of fiscal convergence criteria that restrict the government budget deficit and the overall government debt to certain (politically accepted) levels.

3.2 Institutional solutions to the time inconsistency problem

A starting point for the theoretical foundations of the independence of a monetary institution can be that the behavior of politicians is also greatly influenced by the existing rules of the political game.[7] Even for the simple case in which we have either benevolent policy makers (i.e., policy makers who behave like social planners), or we assume selfish policy makers who are opportunistic and have partisan preferences, the existing incentive constraints can lead to sub-optimal policies. The fundamental reason for this is that policy makers operate in a discretionary regime, i.e., monetary policy decisions are taken sequentially over time in a second-best world and therefore a socially desirable monetary policy may suffer from a lack of credibility caused by time inconsistency.[8] According to Blanchard and Fischer (1989), a policy is time inconsistent when a future policy decision that forms part of an optimal plan formulated at an initial date ex ante is no longer optimal at the time the policy is implemented ex-post, although there is no relevant new information.[9] Various economic decisions are based on agents' expectations of future monetary policy, that is, if we assume that a monetary authority is able to influence the inflation rate. For instance, when deciding on labor supply, wage contracts, investments or portfolio allocation, agents have to form expectations of the future inflation rate. In a discretionary regime, policy makers can make revisions of ex-ante announced policy decisions and therefore create more inflation than forward looking agents expect. One possible way to deal with this "credibility" problem consists in removing all discretionary power from the government – which is, however, quite an unrealistic assumption. The establishment of an independent (international monetary) authority would then be unnecessary, if a strict, legally embedded simple x% money supply rule is used. Governments would then only have to pass a law requiring the government to fix the growth of money supply at a steady rate. However, studies on the employment motive for monetary expansion show that when stochastic shocks are taken into account, the optimal monetary policy does not conform to a simple rule but also includes an optimal shock absorption mechanism.[10] By following a simple rule the government might be able to eliminate the inflation bias, but would produce sub-optimally high output fluctuations. On

the other hand, statutory entrenchment of the optimal state contingent rule appears to be extremely difficult, because it is hard to imagine how all contingencies might be described ex ante and verified ex post. What remains is a choice between simple rules, which are inflexible, and discretionary policies, which lead to an inflation bias. It is this trade-off between credibility and flexibility which has led to a game theoretic foundation of the independence of monetary institutions (like a central bank). In principle, two approaches can be differentiated: on the one hand, Rogoffs (1985), approach to delegate monetary policy to an independent "central" banker and the contracting approach of Walsh (1995 a,b) on the other hand. What both theories have in common is that they propose the establishment of monetary institution structures that permit monetary policy to react to economic disturbances independently, i.e., without interference from the government.

In the following, some basic guidelines for a new monetary institution are developed using the contracting approaches, which seems more suitable for such a new framework.[11] However, they differ in their policy advice regarding the determination of central bankers' objectives and incentives. Starting from a principle agent approach, Walsh (1995a) and Persson and Tabellini (1993) come to the conclusion that even though the government should transfer the control of a monetary policy instrument to an independent monetary institution, the government should also provide this institution with incentives to optimise a social welfare function. This will be done in the form of a (performance) contract between the government (as the principal) and the monetary institution (as the agent). Under the assumption that the preferences of the government and the monetary institution coincide, Walsh (1995a) shows that a simple contract, which makes the central bankers' remuneration linearly dependent on a realized rate of inflation, eliminates the inflation bias without any sacrifice of stabilization efficiency. In addition, he showed that the incentive structures of optimal performance contracts could also be generated through the implementation of inflation-dependent dismissal rules (Walsh (1995b)). Such dismissal rules come close to the corresponding rules of price targeting agreements practised, for example, in the New Zealand Central Bank System (Walsh (1995b)).

As incentives in the traditional approaches depend exclusively on deviations between realized inflation from the socially desirable rate of inflation, performance contracts are frequently interpreted also in the sense of direct inflation targeting. Svennson (1997) shows that under conventional assumptions, the result of an optimal monetary institution contract can also be achieved when the government imposes an inflation target of the international monetary institution which is below the socially desirable inflation, and other monetary targets.

However, an optimal monetary institution contract becomes considerably more complex if we consider "distorted" or selfish preferences of the

governments. If optimal contracts are very complex, problems with regard to their implementation are raised, because it becomes more difficult to review the compliance and the design in the incentive structures. Walsh (1995a) also shows, for example, that the incentive structures of an optimal monetary organization contract are not dependent solely on inflation but also on output, if the managers of this international organization try to maximize their income (Walsh (1195a), pp. 158 ff). Svennson (1997) highlights the importance of persistence in the labour market, which, among other things, leads to a discretionary monetary policy entailing not only an increased inflation bias but also a stabilization bias. The reason for this is that surprise inflation also leads to real economic effects in subsequent periods.

In general, these theoretical considerations show that it is quite difficult to derive from monetary theory an optimal framework under which an international monetary organisation should operate. However, some of the guidelines of the contract approach can be used for modelling an institutional design of an international monetary organization.

4. SOME IDEAS ABOUT THE INSTITUTIONAL DESIGN OF A NEW INTERNATIONAL MONETARY INSTITUTION

The existing international monetary institutions have not been able to deal adequately with the Asian crises. Either they gave the wrong advice, or they were under considerable pressure from the major donor governments to behave in a way that was not useful for the affected countries (like Indonesia or Korea). To lay down the right policies ex ante, so that such major crises can be overcome in the foreseeable future, or might even be avoided in other countries, is a very difficult task. Under the current structure of the IMF, and especially considering the weak instruments this organisation has at its disposal to achieve its goals, one should think of a completely different (new) institution with much more enforceable instruments.

The following suggestions may sound "wild" and eccentric or to some extent unusual, but on the other hand if one considers the outcomes of such major financial and economic crises as those in Indonesia, Thailand or South Korea, it might be necessary to create a new monetary institution. If there is a financial crisis in a country, and if this country calls on the new institution for help, this "help" should be provided by means of a contract between the country and the institution, so that the organization can act like a completely independent central bank, albeit coming from the outside. For a certain period of time (between one and three years) this new IMF will fulfill such a task, with all the influence and means of a central bank. The idea behind this contract approach is that, on the one hand, the moral hazard problem of the

IMF (i.e., the IMF as a lender of last resort which thereby bails out such countries) is considerably reduced,[12] while, on the other hand, this new monetary institution would have a strong incentive to undertake those policies for the affected country which are best suited for it, because it now has full responsibility with respect to the country's monetary policy and thus can act quickly and decisively. As the financial help from the donor countries depends on the success in overcoming the crisis in this country, there are strong incentives for this new institution to act accordingly. On the other hand, there are now considerably higher costs for affected countries, because their governments forfeit much of their (monetary and fiscal policy) power and autonomy. Hence, strong pressure can be put on them from this new IMF to undertake necessary reforms, and maybe, most importantly, the "easy" bail-out option no longer exists.

When creating such an institutional design for the new inter national monetary organization two aspects are very important:[13] First is the institutional design and policy tasks of this new institution, and the second are the implementation problems.

4.1 The institutional design and policy tasks of a new monetary institution

4.1.1 A two-tier banking system

An important requirement of autonomous and successful central banking is the instalment of a two-tier banking system.[14] This means that there should be a strong and independent central bank and that the new monetary institution should take on this role for a certain time, until it has reformed or built up such an institution together with a number of competitive commercial (private) banks. Once we have such a banking system, where the Central Bank sets out clear policy guidelines for controlling the private banking system (with minimum reserve and other monetary policy guidelines) a certain degree of stabilization can be expected. But even when establishing such a two-tier banking system, the new international monetary organization should be able to do more and to undertake a reform of the economic and financial environment of the affected state. In particular, major reforms are necessary in the following areas: complete restructuring of the banking system, a stable legal and administrative framework, and the establishment of control mechanisms on the fiscal authority.

4.1.2 Complete restructuring of the banking system

A main precondition for the efficient conduct of monetary policy is a well-functioning market-based banking system. It is not enough to commercialize state-owned banks and to give them new tasks, and, in addition, let a number of new private banks emerge. In order to enable commercial banks to function effectively under market conditions, deregulation and sometimes privatization of these institutions might be necessary, and an adequate supervisory capacity is also absolutely necessary, because a weak and inefficient banking system hinders, or may even prevent, the implemention of a successful monetary policy. They distort the transmission mechanism of monetary policy, because unsound banks that are not able to control their balance sheets are less responsive to changes in reserve money or interest rates. In addition, the central bank (or the international monetary institution) may come under pressure to give credits for bailing out banks and loosen monetary conditions, thereby undermining their monetary control. Moreover, there are additional problems with unsound banks. There is a general consensus among economists that indirect instruments of monetary policy are more effective than direct instruments that promote more efficient financial intermediation.[15] In the presence of unsound banks, however, introducing indirect instruments such as a credit auction or similar market-based facilities may induce adverse selection and moral hazard effects, because unsound banks may be willing to borrow at any cost to avoid liquidity. What are needed are institutional innovations such as specific supervisory policies and bank restructuring schemes.[16]

4.1.3 A stable legal and administrative framework

A stable legal and administrative framework is extremely important for market economies to function, and we have indeed seen in the financial crises of some of the Asian states just what happens if such an institution is lacking. The instalment of an independent legal system, however, usually takes a long time. During this period, the investment process in the real sector as well as in the financial sector is hampered by great uncertainty. As long as a stable legal framework has not been established, private investments are regarded as very risky by potential investors. Thus private domestic investments tend to be very low and urgently needed foreign investments are delayed. However, it is not only the legal environment that counts, the administrative and moral environments are also important.[17] Administrative inefficiency and corruption impose essential restrictions on the feasibility of projected monetary policy, rendering the assessment of the international monetary institutions performance very difficult.[18] During such a transition period this new financial institution can help to install confidence among domestic and

foreign firms to invest in this "crisis" country with a reliable monetary policy, which restores monetary stability.

4.1.4 Establishment of control mechanisms on the fiscal authority

The domestic monetary institutions are more or less permanently under the pressure of the fiscal authorities to ease their restrictive (anti-inflation) monetary policy. In the public choice literature, central banks are regarded as being exposed to strong political pressures to behave in accordance with government preferences.[19] The point is that restrictive monetary policy aggravates the budgetary position of the government. Since a (temporary) slow down of economic activity, induced by restrictive monetary or disinflation policy, reduces tax income and receipts from seignorage, and since a short term increase in interest rates means an additional burden on public debts which increases the deficit, the government may prefer "easy money" and hence try to obtain public support to push the Central Bank in such a direction. Some evidence exists that the relatively independent US Federal Reserve and the German Bundesbank have often complied with such pressures.[20] Hence it seems to be very likely that even a relatively independent monetary institution will have difficulties withstanding such pressures over a long time. Such pressures from the fiscal policy side can make the commitment of the international monetary institution to following a steady anti-inflationary policy non-credible, since the sustainability of such a policy is doubtful. This problem can only be overcome if some control mechanisms on the fiscal authority are established, like in the Maastricht treaty in the case of the European Monetary Union.

4.2 Implementation problems

In a perfect world, all of the above mentioned institutional changes should be implemented instantly – and hence it would also be desirable to implement all reform elements simultaneously. This, however, is wishful thinking. The problem of sequencing and of making a wrong decision respecting the sequence of reform steps cannot be neglected. For example, it is not sufficient to have formally independent monetary institutions in such crises countries, if there is not sufficient institutional and political support for such a step. There are two ways to strengthen the position of the monetary institution and to enhance the credibility of its pronouncements: The first is to implement appropriate institutional control mechanisms in order to control those driving inflation (such as the fiscal authority and wage – (price setting groups). Alternatively, one could introduce constitutional restriction of government

debts. The second way is to choose an appropriate nominal anchor in order to conduct monetary policy successfully. The question of nominal anchors is important, because the credibility of the monetary policy strategy eventually determines the success of the monetary institution. Credibility, however, is dependent not only on the classical time inconsistency aspects (namely, the incentives of the monetary institution to deviate from its goal) but also upon the expected implementation ability of the strategy that is a function of the reform stage.

5. SUMMARY AND CONCLUSIONS

In this paper it has been demonstrated that we have a new situation after having experienced the Asian crises. In the light of this new development, an attempt has been made to propose some ideas regarding the introduction of a more powerful and effective new international monetary organization. We argued that the policies of this organization will only be successful if it is really independent, especially from its major donors, and hence can act independently if it is "called" on for help by certain countries. As was shown, various instruments should be developed for this new organization, thereby giving it the status of an independent central bank in an affected country for a certain time period. Thus, this organization can really control monetary policy, and also has at its disposal the appropriate instruments to control the crisis country's fiscal policy, so that the goals of this institution can really be achieved. In general, this paper should be seen as a first attempt at suggesting new international monetary institutions after having experienced the Asian financial and economic crises.

ENDNOTES

[1] Compare Frenkel (1999) and Mussa and Savastano (1999) for the traditional policies of the IMF for crisis intervention.

[2] See the contributions by Krueger (1998) and Gutmann (1995).

[3] Compare the critical statements and general empirical results of IMF policies by Edwards (1989), Khan (1990), Schadler et al. (1995) and Krueger (1998).

[4] A third alternative would be to abolish international monetary institutions like the IMF, because they are ineffective and cost a lot of money – with the consequence that "the market" would solve such crises. Such a view is supported by some US economists like Charles K. Rowley from George Mason University in Fairfax (VA) and by some members of the US Congress.

[5] This definition of economic independence is very similar to the meaning of instrument independence introduced, for example, by Debelle and Fischer (1994). These authors distinguish between instrument independence and global independence. Compare Debelle and Fischer (1994), p. 197.

[6] Compare, e.g., Allesina and Grilli (1992), p. 56.

[7] In the public choice literature, the selfish behavior of politicians is extensively analysed and the importance of institutional arrangements is stressed. Compare Mueller (1987), Schneider (1994), and Frey and Eichenberger (1994).

[8] Compare Persson and Tabellini (1997), Wagner (1997).

[9] Compare Schaling (1995), p. 25

[10] Compare Rogoff (1985) and King (1996).

[11] Let me explicitly mention that Rogoff's approach of a conservative central banker is also attractive . Rogoff shows that social welfare can be improved if the government delegates monetary policy to a conservative central banker who agrees with the social preferences regarding the target values of inflation and output, but places a greater weight to the inflation targets than the government. Once appointed, the conservative central banker operates under discretion and is independent to pursue an activist policy. By appropriate choice of the degree of conservativeness, a society realizes the better equilibrium position than the government itself can achieve following inflexible rules or discretionary policy. For further elaborations, see Rogoff (1985), Fischer (1994) and for an extension of this approach assuming the partisan interest of politicians, see Allesina and Gatti (1995). For treatment in the context of the European Union, see Wagner (1997).

[12] Due to this problem, some economists (Vaubel (1983)), argue, that it should be strictly forbidden for the IMF to give loans. For a general discussion see Sacks (1999) and Frenkel (1999).

[13] Compare Eichengreen (1999) and Frenkel (1999) for general reform proposals.

[14] Compare, e.g., Romer and Romer (1997), Sahay and Vegh (1995) and IMF (1997).

[15] See, e.g., Alexander, Balino and Enoch (1995) or Demelo and Denitzer (1997).

[16] For example, Enoch and Breen (1997) demand this.

[17] Compare World Bank (1996, Chapter 5), Freyhold, Gessner, Vial and Wagner (1995), and Frey and Eichenberger (1994).

[18] Compare here the work by Schneider and Enste (2000), who deal with corruption and the rise of a shadow or underground economy in developing states like the Asian ones.

[19] See, for the US, Akhtar and Howe (1991) and Havrilesky (1995); for Germany: Frey and Schneider (1981) and Berger and Schneider (2000); for a survey see Cukierman (1996).

[20] See, for instance, Allen (1986), Allesina (1989) and Berger and Schneider (2000).

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Discussion

Friedrich Schneider's
REFORM OF THE INTERNATIONAL MONETARY INSTITUTIONS

by Benjamin Bental
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Professor Schneider is very concerned about the crises in the Asian countries. These crises, he claims, necessitate a far-reaching reform of the international institutions.

Professor Schneider's prime complaint is against the IMF. The IMF, it is claimed, failed to foresee the crisis, despite the considerable resources invested by it on "surveillance." Professor Schneider's conclusion is that either the IMF should be reformed, or else a new international monetary institution (which I shall call IMI for short) should be established. The IMI will gain access to the government systems of crisis countries, in exchange for the aid that these countries will get. Specifically, the IMI has the following tasks:

a) To thoroughly restructure the banking system through privatization and introduction of a supervisory body.
b) To install a stable legal and administrative framework and *get rid of corruption*!
c) To establish control over the fiscal authority.

Using Prof. Schneider's own words, the IMI should "act like an independent central bank with the additional rights to *discipline* governments *and* other actors in those countries." (italics added – bb). In fact, this implies that "governments in these countries lose a considerable part of their (monetary and fiscal policy) power and autonomy."

I have the feeling that this idea in not quite new. As a matter of fact, I found it well articulated in Rudyard Kipling's famous poem, "The White Man's Burden," First published in McClure's Magazine (Feb. 1899):

Take up the White Man's burden--
Send forth the best ye breed--
Go, bind your sons to exile
To serve your captive's need;
To wait, in heavy harness,
On fluttered folk and wild--
Your new-caught sullen peoples,
Half devil and half child.

Take up the White Man's burden--
In patience to abide,
To veil the threat of terror
And check the show of pride;
By open speech and simple,
An hundred times made plain,
To seek another's profit
And work another's gain

As a matter of fact, Prof. Schneider does mention a third alternative that may solve crisis situations. Albeit in a footnote (#4), he mentions that maybe the IMF should be abolished and that the markets should be allowed to take care of the crises. Clearly, Prof. Schneider does not believe that this is a serious option. Therefore, I find it necessary to rise to the challenge: can markets do the job?

Fortunately, there exists some evidence on market behavior in the very crises that triggered Prof. Schneider's call for reform. Burnside, Eichenbaum and Rebelo (2000) point out some key characteristics of the crises that pertain to our discussion. First, they argue that the crises could not be predicted by standard indicators (e.g. – deficits). In particular, the crises occurred when everything "looked O.K." to bodies like the IMF. Second, using stock-market prices, they convincingly argue that the bank crises were predicted by the financial markets (BER, Table 3)!

The economics underlying these crises, according to BER, have a lot to do with Sargent and Wallace's famous "unpleasant monetarist arithmetic." The governments make (implicit) guarantees to banks. When the likelihood of bank-failures increases, the prospective government deficits grow. In anticipation of the ensuing future inflation, the demand for domestic currency falls, and a currency crisis develops.

BER point out also that the post-crisis policies of the governments of the affected countries was quite reasonable. In particular, they did not expand their money supplies (till the end of 1997), and after a while monetized only part of their debt.

Finally, in their Table 1, BER present evidence on banking crises in other countries. It turns out that such crises are not limited to developing countries. For example, the US had experienced a crisis in the '80s that entailed a loss estimated at about 3% of GDP. Finland had a crisis in the early '90s, causing a loss of about 8% of GDP, etc. I wonder whether Prof. Schneider's recommendations apply also to these countries.

To sum:

a) The recent Asian crises are no indication that markets fail to function. Quite the contrary is true.

b) After the crisis, the governments in the affected countries acted quite reasonably and responsibly.

c) Bad policies resulting in crises are not restricted to developing countries.

Therefore, the least one can say is that the rationale for Prof. Schneider's recommendation is seriously flawed. At a deeper level one may find the recommendations objectionable at least on the grounds that they are "politically incorrect."

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Chapter 12

THE ARCHITECTURE AND FUTURE OF THE INTERNATIONAL MONETARY SYSTEM

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1. INTRODUCTION

There is a great deal of dissatisfaction with the architecture and functioning of the present international monetary system and this gives rise to persistent calls for reforms. Although these are most insistent during periods of crisis, such as at the time of the collapse of the Bretton Woods System in the early 1970s, the foreign debt problem of LDCs in the early 1980s, and the financial crises in emerging markets during the second half of the 1990s, they are heard even during periods of relative tranquility in international financial markets such as now. Dissatisfaction with the functioning of the present international monetary system arises because of excessive volatility and misalignments of exchange rates as well as a result of its inability to prevent or quickly resolve international financial crises. Uncertainty also arises from the move toward monetary unification in the European Union and the creation of the Euro, which seems to be pushing the world toward a tri-polar monetary system based on the dollar, the Euro and the yen. The reforms demanded most consistently are for a move to a system in which exchange rates are more stable and less flexible and emerging market economies are less prone to disruptive financial crises.

In this paper I will first briefly review the architecture and shortcomings in the operation of the present international monetary system. I will then examine the advantages and disadvantages of the various possible alternative exchange rate systems. Finally, I will outline what the future international monetary system is likely to be and how it can minimize the occurrence and

depth of financial crisis in emerging markets in the future and also deal with the creation of the Euro and the movement toward a tri-polar international monetary system. The thesis is that, although we cannot determine the details of the future international monetary system, we can infer its main features and broad outlines from the need to solve today's international financial problems in the face of the constraints imposed by what is politically feasible.

2. ARCHITECTURE AND OPERATION OF THE PRESENT INTERNATIONAL MONETARY SYSTEM

The present international monetary system has four main characteristics. (1) There is a wide variety of exchange rate arrangements. At the end of 1999, 108 countries had a common currency, pegged or quasi-pegged exchange arrangements, 26 countries had managed flexibility, and another 51 countries (including the United States, the 12 countries of the European Monetary System, Japan, the United Kingdom, Canada, Australia, Sweden, Switzerland, and Mexico) had practically full flexibility, at least officially (i.e., according to the IMF classification). These add up to 185 countries (three more than the current members of the IMF). (2) Countries have almost complete freedom of choice of exchange rate regimes. All that is required by the 1978 *Jamaica Accords* (which formally recognized prevailing exchange rate arrangements) is that a nation's exchange rate actions not be disruptive to trade partners and the world economy. (3) Exchange rate variability has been substantial. This is true for nominal and real, bilateral and effective, short-run and long-run exchange rates. The IMF estimated that exchange rate variability has been about 5 times larger during the period of flexible (i.e., since 1971) than under the preceding fixed exchange rate or Bretton Woods System. Exchange rate variability of 2 to 3 percent per day and 20-30 percent per year has been common under the present system. Exchange rate variability has been larger than originally anticipated, does not seem to be declining over time, and is for the most part unexpected. (4) Contrary to earlier expectations, official intervention in foreign exchange markets (and therefore the need for international reserves) has not diminished significantly under the present flexible exchange rate system as compared with the previous fixed exchange rate system. Nations have intervened in foreign exchange markets not only to smooth out day-to-day movements, but also to resist trends, especially during the 1970s and since the mid-1980s (see Salvatore, 1994).

The period of the flexible exchange rate system since 1971 has been characterized by far greater macroeconomic instability in the leading industrial countries than during the previous fixed exchange rate or Bretton Woods period. The system was jolted by two rounds of large oil price

increases (1973-4 and 1979-80), which resulted in double-digit inflation and led to recessions (as industrial nations sought to break the inflationary spiral with tight monetary policies). The period also saw the rapid growth of the Eurodollar market and the liberalization of capital controls. The resulting sharp increase in international capital flows, as well as the institutional changes and adjustments following the collapse of the Bretton Woods System in 1971, rather than the prevailing flexible exchange rates, were, however, the primary cause of the large macroeconomic instability suffered by the leading industrial countries. Indeed, it is now widely agreed that no fixed exchange rate system could have survived the combination of oil shocks, portfolio shifts, and structural and institutional changes that the world faced during the past two decades (see Kenen, 1994; Salvatore, 1994). It must also be remembered that the present managed exchange rate system was not established deliberately as the result of an international agreement, but was instead forced upon the world by default as the result of the collapse of the Bretton Woods System because of lack of an adequate adjustment mechanism and dollar overvaluation.

3. SHORTCOMINGS OF THE PRESENT INTERNATIONAL MONETARY SYSTEM

The present international monetary system does, however, face some important shortcomings. These are (1) the large volatility of exchange rates, (2) the wide and persistent misalignments of exchange rates and huge trade imbalances among the leading industrial countries, (3) the failure to promote greater coordination of economic policies among the leading industrial nations, and (4) the inability to prevent international financial crises or to adequately deal with them when they do arise. Let us briefly examine these shortcomings.

There is little disagreement that exchange rates have exhibited large volatility since the establishment of the present managed exchange rate system. There is also no question that large *exchange rate volatility*, by adding to transaction costs, has affected the volume and pattern of international trade. These costs, however, are not very large and are not greater than those faced by firms in many other markets, as in the metal and agricultural sectors (see *Dell'Ariccia*, 2000). Firms engaged in international trade also seem to have learned how to deal with volatility by pursuing hedging and diversification strategies quickly and at little cost. The *International Monetary Fund* (1984a) concluded that exchange rate volatility did not seem to have had a significantly adverse effect on international trade. Measures could, of course, be devised to reduce exchange rate volatility, but

the costs of these measures would in all likelihood not justify the benefits resulting from them.

Potentially more damaging to the flow of international trade and investments than excessive exchange rate volatility are the wide and persistent *exchange rate misalignments*. Misalignment refers to the departure of exchange rates from their long-run, competitive equilibrium levels. An overvalued currency has the effect of an export tax and an import subsidy on the nation and, as such, it reduces the international competitiveness of the nation and distorts the pattern of specialization, trade, and payments. A significant exchange rate misalignment that persists for years could not possibly be hedged away and can impose significant real costs on the economy in the form of unemployment, idle capacity, bankruptcy, and protectionist legislation.

The most notorious example of exchange rate misalignment was the overvaluation of the US dollar during the 1980s. According to the Board of Governors of the US Federal Reserve System, from 1980 to its peak in February 1985 the dollar appreciated by about 40 percent on a trade-weighted basis against the currency of 10 largest industrial countries. This resulted in the huge trade deficit of the United States and the equally large combined trade surplus of Japan and Germany. It also resulted in increasing calls for and actual trade protectionism in the United States. It has been estimated (see *Council of Economic Advisors*, 1986 and 1987) that the 1985 US trade deficit was $60 to $70 billion greater (about twice as large) than it would have been had the dollar remained at its 1980 level, and that this deficit cost about 2 million jobs in the United States. Despite the fact that by the end of 1988 the international value of the dollar was slightly below its 1980-1981 level (so that all of its overvaluation had been eliminated), large global trade imbalances remained and did not show signs of declining rapidly. Economists have borrowed the term "hysteresis" from the field of physics to characterize the failure of trade balances to return to their original equilibrium once exchange rate misalignments have been corrected. Other major misalignments of the dollar have occurred since the mid-1990s. This is evidenced by the fact that the dollar was worth 84.6 yen in June 1995, 140.3 in June 1998, and 106.1 yen in June 2000. Then there was the overvaluation of the dollar with respect to the Euro (the currency of the 12 members of the European Union) estimated to be about 20-25 percent in summer 2001.

What is important to note, however, is that while misaligned exchange rates can be regarded as the immediate cause of prevailing global trade imbalances, they were themselves the result of internal structural disequilibria in the leading nations. It is these structural disequilibria and not exchange rate misalignments that were and are the fundamental cause of the huge global trade imbalances facing the leading industrial countries today (see Table 1). Specifically, it was the more rapid growth and lower savings rate in the

United States than in Japan and Europe during the second half of the 1990s that led to growing US trade deficits during that period. These also resulted in huge capital flows to the United States, which turned the United States into the largest debtor nation in the world. What can be blamed on the current international financial system, however, is its failure to provide a smoother and timely adjustment to such large and persistent global imbalances. It seems that trade flows now respond with longer than usual lags (ranging up to two years) to exchange rate changes and exchange rates changes respond primarily to international financial flows rather than to trade flows, as in the past.

Table 1: Trade Imbalances of the Leading Industrial Countries (in billions of US dollars)

Country	1992	1993	1994	1995	1996	1997	1998	1999	2000
US	-94.3	-130.7	-164.1	-171.9	-189.4	-194.7	-244.9	-343.3	-447.1
Japan	124.8	139.4	144.2	131.8	83.6	101.6	122.4	123.3	116.7
Germany	28.2	41.2	50.9	65.1	69.4	70.8	78.9	72.0	-----
France	2.4	7.5	7.3	11.0	14.9	26.9	24.9	19.4	3.8
UK	-23.3	-20.0	-16.9	-18.5	-20.2	-19.5	-34.0	-42.4	-43.6
Italy	-0.2	28.9	31.6	38.7	54.1	39.9	36.6	20.4	10.7
Canada	7.4	10.1	14.8	25.9	31.1	17.2	12.8	22.8	36.6

Source: IMF, *International Financial Statistics*, 2000 Yearbook and June 2001.

More serious is the charge that the present international monetary system failed to promote greater coordination of macroeconomic policies among the leading industrial countries. To a large extent this was due to their very different inflation-unemployment tradeoffs. Policy coordination under the present system has taken place only occasionally and has been very limited in scope. One such episode was in 1978 when Germany agreed to serve as 'locomotive' to stimulate growth in the world economy. This experiment came to an abrupt end, however, when Germany, fearing a resurgence of inflation, backtracked. Another episode of limited policy coordination was the Plaza Agreement of September 1985, under which the G-5 countries (United States, Japan, Germany, United Kingdom, and France) intervened in foreign exchange markets to induce a gradual depreciation or soft landing of the dollar in eliminating its large overvaluation. Successful international policy coordination can also be credited for greatly limiting the damage from the 1987 world stock market crash and for preventing the 1994-1995 Mexican crisis from spreading to or having a lasting damaging effect on other

emerging markets. These instances of international macroeconomic policy coordination were, however, sporadic and rather limited in scope.

Finally, the present international monetary system seems unable to prevent international financial crises such as the one that hit Mexico in 1994-1995, South-East Asian emerging economies in 1997-1998, Russia in summer 1998, Brazil at the beginning of 1999, and Argentina and Turkey in late 2000 (and not yet resolved). Perhaps, in a world of highly integrated financial markets and huge international financial flows, it may be impossible to avoid some financial crises. But an international financial system that is prone to frequent and deep international financial crises that require immediate and massive financial resources to prevent them spreading to other nations is certainly not a very good system. The challenge is how to prevent or minimize the number and depth of financial crises and how to resolve the crises that do occur without falling into the *moral hazard trap*. This refers to the situation where investors go after very high returns while disregarding risks in investing in emerging markets, convinced that the IMF will bail them out in case of a financial crisis – thus making returns private and losses public. Be that as it may, there is today a great deal of dissatisfaction with the operation of the present international monetary system and widespread calls for reforms.

4. PROPOSALS FOR REFORMING THE ARCHITECTURE OF THE PRESENT SYSTEM.

Several proposals have been advanced to reduce exchange rate volatility and avoid large exchange rate misalignments as well as to deal with increased international financial instability. One proposal first advanced by Williamson (1986) is based on the establishment of target zones. Under such a system, the leading industrial nations estimate the equilibrium exchange rate and agree on the range of allowed fluctuation. Williamson suggests a band of allowed fluctuation of 10 percent above and below the equilibrium exchange rate. The exchange rate is determined by the forces of demand and supply within the allowed band of fluctuation and prevented from moving outside the target zones by official intervention in foreign exchange markets. The target zones would be soft, however, and would be changed when the underlying equilibrium exchange rate moves outside of or near the boundaries of the target zone. Although not made explicit, the leading industrial nations agreed upon some such 'soft' target or 'reference zones' for the exchange rate between the dollar and the yen and between the dollar and the German mark in the Louvre Accord of February 1987 (but with the allowed band of fluctuation much smaller than the 10 percent above and below the par value advocated by Williamson). During the early 1990s,

however, this tacit agreement was abandoned in the face of strong market pressure, which saw the dollar depreciating heavily with respect to the mark and the yen.

Critics of target zones believe that target zones embody the worst characteristics of fixed and flexible exchange rate systems. As in the case of flexible rates, target zones allow substantial fluctuation and volatility in exchange rates and can be inflationary. As in the case of fixed exchange rates, target zones can only be defended by official interventions in foreign exchange markets and thus reduce the monetary autonomy of the nation. In response to this criticism, Miller and Williamson (1988) have extended their blueprint to require substantial policy coordination on the part of the leading industrial nations so as to reduce the need for intervention in foreign exchange markets to keep exchange rates within the target zones.

Other proposals for reforming the present international monetary system are based exclusively on extensive policy coordination among the leading countries (Bryant, 1995; Hamada and Kuwai, 1997; Milner, 1997). The two most discussed proposals are the ones advanced by McKinnon (1988) and Mundell (2000). In McKinnon's proposal, the United States, Japan, and Germany would fix the exchange rate among their currencies at their equilibrium level (determined by purchasing–power parity) and then closely coordinate their monetary policies to keep exchange rates fixed. A tendency for the dollar to appreciate vis-à-vis the yen would signal that the United States should increase the growth rate of its money supply, while Japan should reduce it. The net overall increase in the money supply of these three countries would then be expanded at a rate consistent with the non-inflationary expansion of the world economy. Although not imminent, Mundell envisions that with even greater inflation convergence, a monetary union among the dollar, Euro, and yen areas and eventually a single world currency is possible and believes that this would be the optimal arrangement or international monetary system. Dornbusch (2001) seems to support this view

Another proposal advocated by the IMF Interim Committee (1986a) is based on the development of objective indicators of economic performance to signal the type of coordinated macro-policies for nations to follow, under the supervision of the Fund, in order to keep the world economy growing along a sustainable non-inflationary path. These objective indicators are the growth of GNP, inflation, unemployment, trade balance, growth of the money supply, fiscal balance, exchange rates, interest rates, and international reserves. A rise or fall in these objective indicators in a nation would signal, respectively, the need for restrictive or expansionary policies for the nation. Stability of the index for the world as a whole would be the anchor for non-inflationary world expansion.

This type of close macroeconomic policy coordination is, however, virtually impossible under present conditions. For example, during the 1980s and early 1990s, the United States seemed unable or unwilling to reduce its huge budget deficit substantially and rapidly, Germany has been unwilling to stimulate its economy even though it faced a high rate of unemployment in its labor force, and Japan has been very reluctant to dismantle its protectionistic policies to allow many more imports from the United States so as to help correct the huge trade imbalance between the two nations. As long as these nations have different *inflation-unemployment tradeoffs*, effective and substantial macroeconomic policy coordination is practically impossible. In fact, these nations consider the ability to choose different inflation-unemployment tradeoffs to be an important advantage of the present international monetary system over the previous Bretton Woods system.

There are also other more practical obstacles to successful and effective international macroeconomic policy coordination. One is the lack of consensus about the functioning of the international monetary system. For example, the United States may believe that a monetary expansion would lead to an expansion of output and employment, while Germany may believe that it will result primarily in inflation. Another obstacle arises from the lack of agreement on the precise policy mix required. This results from the fact that different macro-econometric models give widely different results as to the effect of a given fiscal expansion. There is then the problem of how to distribute the gains from successful policy coordination among the participants and how to spread the cost of negotiating and policing agreements. Empirical research reported by Frankel and Rockett (1988), Frenkel, Goldstein, and Masson (1991) and McKibbin (1997) indicate that nations gain from international policy coordination about three-quarters of the time but that the welfare gains from coordination, when they occur, are not very large. Empirical studies, however, may not have captured the full benefits from successful international policy coordination.

Another class of proposals for reforming the architecture of the present international monetary system is based on the premise that huge international capital flows in today's highly integrated international capital markets are the primary cause of exchange rate instability and global imbalances afflicting the world economy today. These proposals are, therefore, based on restricting international speculative capital flows. Tobin (1978, 1996) proposed to accomplish this with a flat transaction tax, which, therefore, becomes progressively higher the shorter the duration of the transaction, in order "to put some sand in the wheels of international finance." Dornbusch and Frankel (1987) would instead have reduced financial capital flows internationally with dual exchange rates – a less flexible one for trade transactions and a more flexible one for purely financial transactions not related to international trade and investments. By restricting international "hot" money flows through

capital market segmentation or the decoupling of asset markets, Tobin, Dornbusch and Frankel believe that the international financial system can be made to operate much more smoothly and without any need for close policy coordination by the leading industrial countries – which they regard as neither feasible nor useful. Critics of these proposals, however, point out that it is next to impossible to separate "nonproductive" or speculative capital flows from 'productive' or non-speculative ones related to international trade and investments (Dornbusch and Frankel have in fact since moved away from their proposal). We might add that capital is fungible, so that evasion of such a transaction tax or more volatile exchange rates would greatly limit these efforts. Chile, among developing nations, experimented with restricting speculative capital flows throughout most of the 1990s, but there are some questions as to how successful this policy was (see Edwards, 2000). Finally, there is Cooper's (1984) utopian *single world currency proposal.* With a single world currency, of course, there would be no balance of payments or exchange rate problems. But nations would have not control over their money supply and would be unable to conduct any type of national monetary stabilization policy. In short, having a single world currency, as advocated by Cooper, would be like "throwing away the baby with the bath water."

Two other possibilities remain. The first is to move to a freely fexible exchange rate system and the other to do the opposite and revert to a fixed exchange rate system. Only a small minority of economists favor the establishment of a freely flexible exchange rate system today. With a freely flexible exchange rate system, exchange rates are determined by the unrestricted operation of the market forces of demand and supply for foreign exchange. This would, for the most part, insulate a nation from economic disturbances arising abroad and allow the nation to use monetary policy (i.e., change its money supply) to pursue domestic goals. Each nation would thus be able to choose its desired inflation-unemployment trade-off without much regard for balance of payments considerations. A balance of payments deficit would be corrected automatically by a depreciation of the nation's currency, while a surplus would be corrected by an appreciation of the nation's currency. The disadvantage of such a system is that in a world of highly integrated capital markets and huge and rapid international capital flows in response to even minor changes in economic variables and "news", exchange rates are likely to be very volatile, to be subject to over-shooting, and to possibly drift away from equilibrium by substantial amounts and for long periods of time. This seriously distorts the pattern for international specialization and trade. Freed from the obligation to maintain fixed exchange rates, central banks might also embark on inflationary policies so that the monetary discipline (the so-called "anchor" argument) of a fixed exchange rate system would be lost. Because of these serious shortcomings,

there is not much support and there is little chance that a truly freely flexible exchange rate system would be established today.

The other possibility would be to revert to a fixed exchange rate system of the Bretton Woods type but without any anchor to gold. Under such a system, a nation would define the par value (exchange rate) of its currency and the (small) allowed band of fluctuation about the par value, and stand ready to buy or sell its currency on the foreign exchange market (by drawing down or accumulating its reserves of other currencies) in order to prevent the exchange rate from moving outside the allowed band of fluctuation. A trade deficit would be financed by a loss of international reserves, while a trade surplus would be settled by an increase in the nation's international reserves. Under such a system, a nation with a balance of payments deficit would have to reduce its money supply, or increase it at a slower rate than the surplus nation, so that prices would fall in the deficit nation relative to the surplus nation until trade imbalances are corrected. But the nation would have to give up control of its money supply completely, and this no nation is really willing to accept (except when, as in the case of the European Union, it is part of a move toward a single currency). The legitimate unwillingness of nations to lose control of their money supply completely militates against establishing a fixed exchange rate system for the entire world today. In the final analysis, reform of the present system is more likely to involve improving the functioning of the present international monetary system than replacing it with a brand new one (see IMF 1984b and 1987; Kenen, 1994; Goldstein, 1995; Mussa, 1995; Eichengreen, 1994; Bretton Woods Commission, 1994; Baldassarri, Imbriani and Salvatore, 1996; Fratianni, Salvatore and Von Hagen, 1997; Salvatore, 1998a; 1999; Frankel, 1999; Fratianni, Salvatore and Savona, 1999, and Clarida, 2000).

5. THE INTERNATIONAL MONETARY SYSTEM OF THE FUTURE

Although the details of the international monetary system of the future cannot be predicted, we can infer its main features and broad outlines from the need to address the serious shortcomings of the present system in the face of the political and economic constraints that nations face. What seems certain is that in a world of huge international capital flows, such as we have today, no fixed exchange rate system could probably survive without extensive controls on international capital flows. Furthermore, the history of the past two decades seems to have made quite clear that nations seem unwilling to completely give up control over their money supply and are unable to use monetary policies to achieve domestic goals for the sake of external balance. The only exceptions seem to be (1) the establishment of a

currency board by a developing country in crisis (as Argentina in 1991) and (2) the adoption of a common currency in the process of monetary integration (as in Euroland at the beginning of 1999).

At the same time, the leading industrial nations do believe that exchange rates have been far too volatile and have overshot by substantial degrees and for long periods of time their equilibrium levels (e.g. the US dollar in the mid 1980s and during the past few years) and so a pure or freely flexible exchange rate system is also unacceptable. Also unlikely is an international monetary system based on much greater international macroeconomic policy coordination among the leading nations than has until now been possible in view of their different inflation-unemployment trade-off and because of disagreements as to the causes of global imbalances and the effect of various macro stabilization policies. Finally, an international monetary system based solely on target zones is also not likely to work because it attacks the symptoms rather than the underlying causes of the exchange rate misalignments, and it may exhibit the worst features of both fixed and flexible exchange rates.

Where does that leave us? What is the best monetary system for the future? It seems to me that the international monetary system of the future will have to be a hybrid system, not too dissimilar from the present system, under which balance of payments adjustment is achieved by allowing the various adjustment mechanisms available to operate by different degrees depending on the nation and the specific circumstances under which each nation operates. Specifically, excessive volatility and gross misalignments can be overcome by the leading nations agreeing on some rough equilibrium exchange rate between their currencies and then each nation intervening in foreign exchange markets, adjusting the growth of its money supply, and responding to calls for policy coordination based on its circumstances, the domestic targets that it sets for itself, and the relative importance of these domestic targets. International financial crises in emerging markets, on the other hand, can be minimized in the future by the reforms in the architecture of the present international monetary system (to be examined in the next section).

One thing is clear, balance of payments (as any type of) adjustment is painful. Rather than using only one method of adjustment (such as changes in exchange rates, changes in the money supply, fiscal or other policy changes) each nation will allow all of the mechanisms of adjustment to operate in various degrees to suit its own specific preferences. Thus, a large nation facing a large external deficit will want to devalue its currency or allow it to depreciate rather than restrict domestic demand. On the other hand, another large nation facing an internal disturbance (such as Japan experiencing slow growth or recession during most of the 1990s) would want to place a greater share of the adjustment burden on internal, especially fiscal, policies to

stimulate demand rather than on exchange rate changes. Although somewhat reluctantly, the Japanese government seems to have gradually come to accept this view. Allowing its currency to depreciate with respect to the dollar would be the wrong policy because Japan already has a huge and persistent trade surplus with the United States.

In this connection, it must be pointed out that external pressure on a country to put its house in order, while certainly not binding, is not entirely irrelevant and ineffective and may reinforce domestic pressures to undertake more forceful action to correct the problem than otherwise. To some extent, this was certainly true in the case of the United States during the late 1980s with regard to its budget deficit. Thus, we could say that we already have some degree of *implicit* international macroeconomic policy coordination. Smaller and more specialized economies may also opt for smaller exchange rate flexibility and greater reliance on internal expenditure-changing policies than larger open economies to achieve balance of payments adjustment. It may also encourage small nations to join or form blocks and currency schemes (such as the European Union).

Rather than a shortcoming, such a hybrid system of managed exchange rates around broadly defined equilibrium exchange rates among the world's leading currencies, by providing the freedom for each nation to determine how much it will rely on the various mechanisms of adjustment, is a crucial advantage of the international financial system being proposed. The broad outline of such a system is already in place today and, while its operation can certainly be strengthened by striving for regular consultations and for as much policy coordination as is feasible under various circumstances among the leading nations, no other system seems to be better able to deal with today's international monetary problems. Excessive exchange rate volatility and misalignments can be addressed, to a large extent, by adopting some loose form of target zones. Different inflation-unemployment tradeoffs can be reconciled, at least to some extent, by regular consultation and by whatever policy coordination is possible. The inherent inflationary tendency built into the system by the flexibility of exchange rates within the target zones can similarly be curbed by consultation and limited policy coordination. This is not as unrealistic as might be thought on purely theoretical grounds. After all, the sharp world-wide inflationary tendencies of the 1970s have been brought under control by the leading nations within the framework of the present international financial system and in the absence of a great deal of policy coordination.

Much greater policy coordination would not be possible without each nation at the same time giving up its own unique set of domestic targets. But by the actions and pronouncements of their leaders, the leading industrial countries have clearly indicated that they value very highly such freedom and flexibility, limited as it is, in today's interdependent world. Besides,

separation of powers between the executive and legislative branches of government in the United States and in Euroland practically precludes any greater degree of international policy coordination. Furthermore, the leading industrial nations have shown that they can control the worse inflationary excesses that can arise under a flexible exchange rate system with the limited degree of policy coordination that has been possible.

In the final analysis, most of the global imbalances faced by the leading industrial nations today are rooted in domestic imbalances, such as lack of more internal stimulus in the European Union and the traditional unwillingness on the part of Japan to rely more on the expansion of internal demand for growth than on exports to the United States, and cannot be blamed on the operation of the present international financial system itself. Automaticity in correcting internal imbalances would mean that most of the flexibility and discretion that nations enjoy under the present and proposed systems would be lost. Nations simply cannot have it both ways. They cannot impose automaticity on themselves and at the same time retain the freedom and discretion to choose the unique set of domestic targets that they prefer and the specific combination of adjustment policies that best suits their particular situation. In the end, reform is likely to involve improving the functioning of the present system rather than replacing it or completely changing it.

What is being proposed here is different from what many leading economists have been advocating. For example, Robert Mundell would prefer a return to a fixed exchange rate system, Milton Friedman a freely flexible exchange rate system, John Williamson target zones, McKinnon a system based on deep international macroeconomic policy coordination among the leading countries, Tobin a system based on controls on destabilizing international capital flows, and Cooper a single world currency. Indeed, many have called the present international monetary arrangements a "non-system", perhaps because it is not a pure or clear-cut system. But this does not make sense. The flexibility of the present system (with the improvements suggested above and those examined in the next section) relying, as it does, on various means of adjustment, is in fact its strength, not its weakness. No other system seems feasible today. Thus, the future international monetary system will very likely necessarily involve improving on the functioning of the present system rather than replacing it with a more "pure" system, as some advocate. Recently, Frankel (1999) came to the conclusion that "no single currency regime is right for all countries at all times," but from a narrow, single-nation perspective. The above analysis, on the other hand, takes a broader system-wide approach and has long been advocated by this author (see Salvatore 1989, 1994, 1995, 2000a, 2000b).

6. INTERNATIONAL FINANCIAL CRISES AND THE ARCHITECTURE OF THE FUTURE INTERNATIONAL MONETARY SYSTEM

Another serious problem facing the present international monetary system is its seeming inability to prevent international financial crises, especially in emerging markets. There have been six such crises since the mid-1990s: Mexico in 1994-5, South-East Asia in 1997-1999, Russia in summer 1998, Brazil in 1999, Argentina in 1999-2001 and Turkey in 2001. Although the fundamental problem that led to these crises was different, the process was very similar. Each crisis started as a result of a massive withdrawal of short-term liquid funds at the first sign of financial weakness in the nation. Foreign investors poured funds into many emerging markets during the early 1990s after these nations liberalized their capital markets in order to take advantage of high returns and in order to diversify their portfolio, but immediately withdrew their funds on a massive scale at the first sign of economic trouble in the nation – thereby precipitating a crisis. The danger for the international monetary system is that such crises could spread to the rest of the world, including industrial countries.

A number of measures have been proposed and some steps have already been taken to avoid or minimize such crises in the future and thus greatly strengthen the *architecture of the present international monetary* and improve its functioning. These include: (1) increasing transparency in international monetary relations, (2) strengthening banking and financial systems, (3) promoting greater private sector involvement, and (4) providing adequate financial resources to emerging markets to prevent them from being affected by financial crises elsewhere (i.e., to avoid contagion – see IMF 1996a,b,c, IMF 1998b; IMF, 1999; Task Force Report, 1999; Eichengreen, 1999; Salvatore, 2000a,b; IMF, 2000a,b,c).

Increased transparency is essential because markets cannot work efficiently without adequate, reliable, and timely information. To this end, the IMF established the *Special Data Dissemination Standards (SDDS)* in 1996, which have already been accepted by about one-quarter of the membership. These *early-warning financial indicators*, such as the budget and current account deficit, long-term and short-term foreign debts, and international reserves as percentages of GDP could signal which emerging country or countries might be heading for trouble. The hope is that foreign investors would take note of the potential problem and avoid pouring excessive funds into the nation or nations, thus possibly avoiding a crisis. The SDDS has since been supplemented by the *Dissemination Standard Bulletin Board (DSBB)*, which is an electronic site on the Internet that provides information concerning countries' economic and financial data systems with more than 40 subscribers, including Hong Kong and China. The IMF is also proposing to

set up a clearing house to keep track of all the loans and liquid investments made by foreign banks and other financial institutions in emerging markets. Lack of this information has led to excessive loans and other liquid investments in emerging markets in the past, which eventually led to crisis. For this purpose, the IMF set up in March 1999 the *Financial Stability Forum (FSF)*. In May 1999, the IMF and the World Bank jointly set up the *Financial Sector Assessment Program (FSAP)* and the related *Financial System Stability Assessments (FSSAs)* to identify financial system strengths and vulnerabilities so as to help develop appropriate policy responses, and in September 1999 it renamed the *IMF Interim Committee* as the *International Monetary and Financial Committee (IMFC)*.

The second way of improving the architecture of the present international monetary system is by strengthening emerging markets' banking and financial systems. Weakness in banking systems were common to all emerging markets that were involved in financial crises during the past five years. A weak banking and financial system invites a financial crisis and guarantees its severity. The banking and financial system can be strengthened by improving supervision and prudential standards, and making sure that banks meet capital requirements, make adequate provisions for bad loans, and publish relevant and timely information on their loan activity. It is also important to deal with insolvent institutions promptly and effectively. Implementing these policies is difficult, especially when a nation's banking and financial system is already in trouble, but a sound financial system is essential for the health and growth of the entire economy. The IMF has been formulating standards or codes of good practice in accounting, auditing, corporate governance, payments and settlements systems, insurance, and banking based on internationally accepted Basle Core Principles, some of which are already being implemented as part of the IMF surveillance function.

The third way of strengthening the present international monetary system is to get much greater involvement of the private sector in sharing the burden of resolving a financial crisis in emerging markets by rolling over and renegotiating loans or providing new money rather than rushing for the exit, as a precondition for IMF official assistance. The logic is that lenders should be compelled to take some responsibility for the crisis by having lent too many short-term funds to an emerging market for non-productive purposes. That is, lenders should be "bailed in" rather than be allowed to bail out and rush for the exit door. This is exactly what happened on January 28, 1998 when the IMF and rich-countries' government put strong pressure on international banks to reschedule $24 billion of Korean debt with a plan to replace bank loans with sovereign-guaranteed bonds. A similar strategy was taken in Brazil in early 1999. This, however, was relatively easy to do in Korea and Brazil because the problem there was primarily a liquidity crisis

rather than a much more serious structural problem (which would have raised serious doubts as to whether lenders would ever be repaid or even receive service payments). The legal framework to compel creditors to accept a Chapter11-type of arrangement, as it exists in the United States today, does not exist on a global scale and it is not likely to be established soon. A formal change in the wording of bond contracts is also a long way off. Lenders would either charge much higher interest rates to compensate them for the higher risk or avoid lending to an emerging market economy altogether. Yet, the notion of moving toward some kind of debt-restructuring system is getting a lot of attention at the IMF, the World Bank, and the Bank for International Settlements (BIS). The United States, the European Union and Japan have also been grappling with this issue at recent the G-7 or G-8 Meetings. Of course, it should not be easy for an emerging market economy in financial difficulty to unilaterally declare bankruptcy (so as to avoid the problem of moral hazard), but some way of bailing in lenders is clearly necessary to resolve a financial crisis, when one does erupt. In those situations, it should be the IMF to certify when an emerging market is sufficiently in trouble to trigger the restructuring mechanism.

One reform that the IMF has already introduced in April 1999 is the *Contingency Credit Line (CCL)* to provide strong financial backing to an emerging market before it faces a financial crisis, if there is a danger that it might be dragged into one for no fault of its own. For example, it often happens that international investors are unable to make a distinction among emerging markets and withdraw funds from all of them when only one or a few of them face a crisis. Thus, when the crisis erupted in Russia in the summer of 1998, international investors withdrew funds also from South-East Asia and Latin America, even though conditions were very different in those markets. In order to have the financial resources to implement its plan to provide large financial assistance to an emerging market that is in danger of being engulfed by a financial crisis elsewhere, the IMF also negotiated the doubling (to $46 billion) of the amount that it could borrow under the (New) General Arrangement to Borrow and an increase in the total resources at its disposal to $28 billion. The *Contingency Credit Line (CCL)*, however, is yet to be used.

In the final analysis, it must be realized, however, that even if all the reforms being considered were adopted, they would not eliminate all future financial crises. All that we can hope is that these reforms would reduce the frequency and severity of financial crisis in the future. In short, some international financial instability and crises may be the inevitable result of liberalized financial markets and the cost that we have to pay in return for the benefits that liberalized financial markets provide to industrial and emerging market economies alike.

7. THE EURO AND THE INTERNATIONAL MONETARY SYSTEM

The introduction of the Euro on January 1, 1999 proceeded smoothly and did not create problems for Europe or for the working of the international monetary system (see, Danthine, Giavazzi, and Thadden, 2000). Despite its weakness relative to the dollar and the yen since its introduction, the Euro is already an important international currency, second only to the dollar. The reasons are that the EU (1) is as large an economic and trading unit as the United States, (2) has a large, well-developed and growing financial market, which is increasingly free of controls, and (3) is expected to have a good inflation performance that will keep the value of the Euro stable. If the international use of the Euro were to match its share of world GDP and exports, the Euro would become as important as the dollar as an international or vehicle currency. This would mean that the relative international use of the dollar would fall to 40-45 percent of the total, with an equal share going to the Euro, and the remainder going mostly to the yen and a few other smaller currencies, such as the Swiss franc, the Canadian dollar, and the Australian dollar – mostly the former.

It is unlikely, however, that the international use of the Euro will soon be able to match the EU share of world GDP and exports, as some European economists such as Portes and Rey (1998) believed. First of all, the absence of a federal government in the EU puts a ceiling on the integration process in the market for government securities, and so financial integration in the EU will inevitably fall short of that in the United States. Secondly, with a smaller and declining covariance among the assets of the various EU members, according to strict portfolio diversification motives, there is less reason for EU investors to increase their holding of Euro-denominated assets, while there will be greater reason for increasing their dollar- and yen-denominated assets as long as the ECB pursues an independent monetary policy with respect to the Fed and the Bank of Japan. Thirdly, a portfolio shift in favor of Euro-denominated assets will occur only if the ECB will conduct a tighter monetary policy than the Fed but, as we have seen above, with the need to reconcile the different monetary-policy requirements of the various EU members, this may not be possible (Salvatore, 2000a).

There are also other reasons why it is unlikely that the Euro can soon displace the dollar as the most important international currency. These are: (1) most primary commodities are priced in dollars and this is likely to remain the case for some time to come; (2) non-EU countries are likely to continue to use the dollar for most of their international transactions for the foreseeable future, with the exception of the former communist nations in central and eastern Europe and the former French colonies in Africa, which

will, in all likelihood, shift from using the Deutsche mark or French franc, respectively, to using Euros, and (3) sheer inertia that favors the incumbent (the dollar). Thus, it is more likely that about 50 percent of international transactions will be conducted in dollars in the future (down from the present 60 percent or so), 40 percent in Euro, and the remaining 10 percent in yens and other smaller currencies (see, McCauley, 1997). That is, the Euro will very likely have more weight than the mark has today but somewhat less than the relative weight that the EU has in international trade and finance in the world economy – at least during the first few years of its existence. This would involve a substitution of dollars for Euros of about $500 billion to $1 trillion and lead to a depreciation of the dollar vis-à-vis the Euro. But since this is likely to occur gradually over time, it may not put undue pressure on the dollar. Furthermore, the increased financial integration resulting from the replacement of many currencies by one will also expand the supply of Euro-denominated assets as foreign borrowers tap into the expanded European financial system and thus dampen the tendency of the Euro to appreciate with respect to the dollar.

What may create problems is the fact that with most trade and financial relations conducted within, rather than among, the three major trading blocks (the EU, NAFTA, and Asia centered on Japan), there will normally be less concern about the Euro/dollar and Euro/yen exchange rate, and less interest in intervening in foreign exchange markets to stabilize exchange rates. Only with the deepening depreciation and undervaluation of the Euro in 2000, did interest in the Euro exchange rate came to the forefront. With less interest and less intervention, it is likely that the Euro/dollar and Euro/yen exchange rate will continue to be volatile in the future. This tendency also arises because the exchange rate is one of only a few market equilibrating mechanisms operating among the three major trading blocks. Exchange rates among the three leading currencies are likely to be especially volatile if and when the three blocks will face different cyclical conditions and shifting market perceptions about economic and financial prospects (Buiter, 2000).

As pointed out in Section 2 of this paper, however, even large exchange rate volatility among the dollar, the Euro and the yen is not likely to create a serious problem for the functioning of the international monetary system and can be hedged away. Potentially more serious are the wide and persistent exchange rate misalignments (as they seem to have developed in 2000 between the Euro, on the one hand, and the dollar and the yen, on the other). As pointed out earlier, these distort the pattern of international specialization, trade and payments and, as opposed to exchange rate volatility, cannot be hedged away. Large and persistent misalignments among the dollar, the Euro and the yen can thus impose significant real costs on an economy in the form of unemployment, idle capacity, and bankruptcy and lead to dangerous trade protectionism across the Atlantic and the Pacific in the future.

Also important is the relationship between the Euro and the currencies of the EU countries that have so far refused to join the Euro (the British pound, the Swedish krona, and the Danish krone). The exchange rate between the Euro and these other currencies is also likely to be subject to high volatility and misalignments without the establishment of an exchange rate mechanism similar to the ERM. But, as the experience with 1992-3 ERM crisis showed, such a system is unstable and crisis prone (Salvatore, 1996). It is, however, in the interest of Britain, Sweden, and Denmark to enforce strong limits on the fluctuation of their currencies with respect to the Euro in anticipation of their possible joining it in the future, and to avoid importing financial instability in the meantime. Then, there is the exchange rate between the Euro and the currencies of the dozen or so former communist countries that are in line for admission into the European Monetary Union. These countries have opted for a wide variety of exchange rate arrangements from currency boards to flexible rates (see, Salvatore, 2001). Important as they are, it is, however, the exchange rate between the Euro and the dollar and the Euro and the yen that will determine for the most part how smoothly the entire international monetary system will operate in the future.

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Discussion

Dominick Salvatore's

THE ARCHITECTURE AND FUTURE OF THE INTERNATIONAL MONETARY SYSTEM

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The purview of Professor Salvatore's paper can perhaps be described most succinctly by borrowing the vocabulary of the medical profession. In these terms, it encompasses a diagnosis of what is wrong with the present international monetary system, a prognosis regarding its future, and a survey of suggested "cures", in the shape of the various proposals for reform that have been elaborated by academics and by various arms of the International Monetary Fund. His diagnosis of the shortcomings of the present system and his descriptions of various proposals for reform, along with his views on the difficulties with which each is fraught, command widespread agreement. His prognosis, summarized in his paper's final sentence is, in the view of this commentator, right on the money. But it is difficult not be skeptical about his own hybrid proposal for improving exchange-rate arrangements, while his comments on what has come to be called the architecture of the international financial system (that is, financing arrangements designed to prevent or minimize financial crises in emerging markets) are unarguable but make no pretense of addressing the very substantial difficulties of implementation; here the devil is indeed in the details.

The shortcomings with which Professor Salvatore taxes the present system are several: unexpectedly high and non-declining volatility of exchange rates; wide and persistent misalignment of important rates which, together with the failure to promote coordination of economic policies among the leading industrialized nations, result in large and persistent trade imbalances; and the inability to prevent or deal adequately with international financial crises. He notes that, while short-term rate volatility can be handled relatively easily by hedging or diversification, the other issues he cites are likely to impose

significant real costs on the economies of industrialized or emerging nations or both.

Both in his criticisms of the present system and in his description of how a Bretton Woods-type system would function the author, implicitly if not explicitly, regards a large trade surplus or deficit as a disequilibrium situation that requires correction. But such a trade (or, more precisely, current-account) imbalance may in fact reflect a rational and globally-optimal net flow of capital from a country where returns are low to where they are higher. The fact that such imbalances can be the source of political tensions should not obscure this economic reality.

Salvatore's prognosis for the future of the international monetary system in the absence of effective reform is not encouraging. He notes that it is "[L]arge and persistent misalignments among the dollar, the Euro and the yen" that are most likely to "impose significant real costs on an economy in the form of unemployment, idle capacity, and bankruptcy and lead to dangerous trade protectionism across the Atlantic and the Pacific in the future." Indeed, he ends his paper by opining, correctly in my view, that "it is the exchange rate between the Euro and the dollar and the Euro and the yen that will determine for the most part how smoothly the entire international monetary system will operate in the future." At the same time, he fears that "with most trade and financial relations conducted within, rather than among, the three major trading blocks..., there will normally be less concern about the Euro/dollar and Euro/yen exchange rate, and less interest in intervening in foreign exchange markets to stabilize exchange rates..."

Such a prognosis implies that the present international financial monetary system is far from ideal and that the need for effective reform measures is urgent. Salvatore systematically, if briefly, reviews the various proposals for regularizing the exchange-rate relationships that today constitute, in the eyes of many observers, a precarious "non-system" These proposals, which are by no means all mutually exclusive, include target zones, extensive policy coordination among the leading industrial countries to maintain exchange rates fixed at "equilibrium" levels, objective indicators to guide such coordinated macro-policies, restrictions on international flows of speculative capital, freely flexible (non-managed) exchange rates, a system of "fixed" (that is, pegged) rates akin to the Bretton Woods system but without the latter's anchor to gold, and a single world currency. But, after listing the strengths and weaknesses of each, the author concludes that none is likely to be both effective and acceptable.

In place of any of these arrangements proposed by others, Salvatore recommends as "the best monetary system for the future...a hybrid system, not too dissimilar from the present system, under which balance of payments adjustment is achieved by allowing the various adjustment mechanisms available to operate by different degrees depending on the nation and the

specific circumstances under which each nation operates." There is considerable evidence to support his view that, from a global as well as a national perspective, "no single currency regime is right for all countries at all times," and that different choices of adjustment mechanisms by countries with different degrees of openness and at different stages of economic development would not be a barrier to effective reform of the system. The difficulty, however, is that "effective and substantial" coordination among the macro-economic policies of the leading industrialized nations is essential to make this hybrid system work.

Salvatore has already given some cogent reasons why such coordination is unlikely to be achieved. These include substantial differences among these nations in their inflation-unemployment tradeoffs, a lack of consensus regarding the effects of monetary and/or fiscal expansion (or contraction), and disagreements about how to distribute the gains from coordination (or, more likely, the costs of adjustment).

Anticipating that a hybrid of several ineffective and/or unacceptable reform proposals is likely to prove more promising than its "pure" components requires an act of faith similar to assuming that combining two weak financial institutions will necessarily create a strong one. If the United States, the European Union countries and Japan have been unable so far to overcome the internal structural disequilibria that stand in the way of the macro-economic policy coordination essential to avoid large and persistent misalignment of exchange rates, what will make them more willing and able to do so in the future? Salvatore, who has pinpointed so clearly the shortcomings of the present system and described so cogently the developments that will lie at the heart of that system's future, offers no persuasive answer to this all-important question.

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