

ESSAYS IN INTERNATIONAL FINANCE

No. 117, June 1978



DOMESTIC ORIGINS OF THE MONETARY
APPROACH TO THE BALANCE OF PAYMENTS



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INTERNATIONAL FINANCE SECTION

DEPARTMENT OF ECONOMICS

PRINCETON UNIVERSITY

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This is the one hundred and seventeenth number in the series **ESSAYS IN INTERNATIONAL FINANCE**, *published from time to time by the International Finance Section of the Department of Economics of Princeton University.*

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PETER B. KENEN, *Director*
International Finance Section

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Library of Congress Cataloging in Publication Data

Grubel, Herbert G

Domestic origins of the monetary approach to the balance of payments.

(Essays in international finance; no. 117 ISSN 0071-124X)

Bibliography: p.

1. Balance of payments. I. Title. II. Series: Princeton University. International Finance Section. Essays in international finance; no. 117.
HG136.P7 no. 117 [HG3882] 382.1'7 76-21698

Printed in the United States of America by Princeton University Press
at Princeton, New Jersey

Domestic Origins of the Monetary Approach to the Balance of Payments

The objective of this essay is to explain the essential contents of the monetary approach to balance-of-payments analysis. This approach, which has been developed recently in the writings of Mundell (1968, 1971), Johnson (1972), Dornbusch (1973a, 1973b), and others identified with the Chicago School, challenges the conventional wisdom derived from orthodox Keynesian balance-of-payments theory. Summarizing the monetarist challenge is the argument that a country's persistent payments imbalances can be due only to faulty monetary policy and cannot be remedied by either devaluation or the use of fiscal policy.

An attempt will be made here to set out clearly the differences between the assumptions about the real world and judgments about empirical relationships made by the monetarists and Keynesians that lead to this difference in conclusion about the roles of exchange-rate changes and monetary and fiscal policy in the determination of countries' balance of payments.

Other studies have explained the essential ingredients of what for simplicity we might call "international monetarism," most notably those by Johnson and Frenkel (1976), Masera (1974), Mussa (1974), and Whitman (1975). The present essay differs from these by starting its analysis with an explanation of the differences between monetarist and orthodox Keynesian views on the roles of monetary and fiscal policy in the determination of national income in a closed economy. After this task has been accomplished, the arguments of international monetarism can be developed easily and briefly. They will be seen to follow directly from the consistent application of domestic monetarist arguments to the international sphere. This particular expository approach should make it possible for many economists trained in the Keynesian orthodoxy but not specialists in international monetary economics to appreciate the recent developments in this field. Section 3 contains brief sketches of some additional monetarist challenges to such traditional Keynesian approaches to balance-of-payments analysis as the assumption of imperfect goods and capital markets and the disregard of stock and flow relationships.

Many discussions with Max Corden have helped me formulate the arguments presented in this essay. I have also benefited from comments made by participants at seminars at the London School of Economics, the International Monetary Fund, Duke University, the University of Madrid, and Nuffield College.

I Monetarist Critiques of the Keynesian Closed-Economy Model

It is useful to distinguish between two phases in the evolution of Keynesian macroeconomic analysis. During the first phase, the focus of analysis was on how monetary and fiscal policies could be used to combat the traditional business cycles that have haunted free-enterprise economies throughout modern history, and in especially virulent form during the Great Depression of the 1930s. The second phase began during the late 1950s and early 1960s, when the focus of analysis shifted to the problem of how to lower the average rate of unemployment experienced over complete cycles of boom and recession. This shift was brought about by the experience of the immediate postwar decade, during which the amplitude of business-cycle fluctuations was very small by historic standards but the average rate of unemployment in the United States was between 5 and 6 per cent. The shift was achieved by the introduction of the analytical concept of the Phillips-curve trade-off between unemployment and inflation. The conclusion of the second phase was that the average rate of unemployment could be lowered by the proper use of monetary and fiscal policies in much the same way these policies were used to reduce purely cyclical unemployment, except that as a consequence of aiming at a lower average rate of unemployment it would be necessary for society to accept some price inflation. Empirical judgments were made that the welfare gains from reducing the U.S. unemployment rate from 5.5 to 3.5 per cent exceeded the social costs of an inflation rate believed to be a steady 2 per cent per year.

Monetarist critiques of Keynesian analysis also can usefully be separated into two different sets. The first set, which I shall call the extreme monetarist critique of Keynesian models, is aimed at the use of monetary and fiscal policies for business-cycle stabilization. The second set, which I shall call the moderate monetarist critique, is aimed at the idea that monetary and fiscal policies can be used to lower the average rate of unemployment.

The Extreme Monetarist Critique of Keynesian Stabilization Policies

Monetarists believe that business-cycle instabilities have been caused and reinforced in the past predominantly by disturbances emanating from financial sectors and that the real sectors of economies are inherently very stable. Their view is that the frequency and amplitude of business cycles could be minimized by a government program that would let the money supply grow at a constant rate equal to the long-run trend growth of real output. This policy recommendation is backed by a number of other empirical judgments, such as that the demand and supply functions for money are stable and that the income elasticity of the demand for money is one. Monetarists think that a

steady rate of increase in the money supply would limit booms; excessively optimistic expectations about the profitability of investment and the consequent large demand for loans would lead to higher interest rates, curbing the boom level of investment. An analogous process of falling interest rates during a recession would limit the downturn of business activity. During extremely large swings in cyclical expectations, the stabilizing influence of the interest-rate changes accompanying steady money-supply growth would be reinforced by the effects that price-level changes have on the real value of money, the so-called "wealth effect" made famous by Pigou and Patinkin. Boom-caused inflation lowers the real value of money held by the public and reduces the desire and ability to spend and invest, thus cutting into the boom, and vice versa for depressions and falling prices.

Monetarists argue that countercyclical variations in the money supply brought about in the past by deliberate policies of central banks often have increased rather than decreased the amplitude and frequency of business cycles, for three reasons.

First, monetary policy based on orthodox Keynesian views of the problem had as its primary objective the stabilization of the interest rate and, through it, the level of income and employment. As is well known from models of the Keynesian system, full employment is associated with one unique interest rate. The basic rule guiding monetary policy, therefore, has been to attempt stabilization of that interest rate by a strategy known as "leaning against the wind"—increasing the money supply when the actual interest rate rises and reducing the money supply when it falls. Monetarists allege that such a policy rule adds to instability because it raises the money supply when boom expectations lead to excess demand for credit and real goods and services, accommodating that demand to a greater degree than when the money supply is not increased. An analogous process leads to deepened recessions.

Second, the Keynesian framework of analysis neglects the role of prices and expectations about the rate of inflation in the determination of the demand for credit, the interest rate, and the real quantity of money supplied. As a result, on occasions the monetary authorities interpreted a rise in the interest rate as a sign of tightening credit, which they ordered to be mitigated by an increase in the money supply, while in reality the rise in the interest rate was due to the expectation of a higher rate of inflation and not to monetary tightness. Under these conditions, the increase in the money supply further eased credit and fueled the boom and inflation.

Third, changes in the money supply and interest rates caused by the monetary authorities affect spending on real goods and services not immediately but with lags of varying and unknown length. According to the extreme monetarist critics of discretionary monetary policy, easing of credit, even if timed properly for current conditions of recession, may not induce

higher levels of aggregate spending until independently developing business-cycle forces have caused the appearance of excess demand.

Extreme monetarists argue that fiscal policy, defined as government deficit and surplus spending financed through the sale and retirement of bonds, also is unable to stabilize aggregate demand over the business cycle because of political difficulties in getting tax and expenditure decisions through democratic legislatures quickly and in the right magnitudes. Furthermore, fiscal policy tends to have effects on real expenditures only with unknown lags, so that it may be destabilizing. Most fundamentally, however, monetarists argue that government budget deficits do not increase aggregate expenditures, for a number of reasons.

At the highest level of theoretical abstraction, taxpayers, who must service and repay the bonds issued by the government to finance deficit spending, should rationally reduce their own real expenditures in anticipation of the future tax payments implied by new bond issues, thus offsetting the increase in aggregate demand created by government deficit spending. Still at a high level of abstraction is the argument that government expenditures on investment not justified on efficiency grounds must compete with, and therefore lead to, a reduction in private investment that offsets the stimulative effects of public investment. If the government incurs its deficit by spending on consumption, total social investment declines and, in order to maintain the capital stock at its efficient level, private savings have to rise, offsetting the increase in aggregate expenditure caused by the government's deficit spending on consumption. At a more practical level of analysis, extreme monetarists point to the money-market effects of government deficit financing—higher interest rates and the crowding out of private borrowers whose investment projects, especially residential housing, are sensitive to the cost of credit. As a result, the reduction in private investment expenditures offsets the stimulation of aggregate demand by the initial government deficit spending. For all these reasons, extreme monetarists recommend that discretionary fiscal policy aimed at the stabilization of aggregate demand be stopped and that governments be required to maintain balanced budgets over the full cycle, matching deficits during recessions with surpluses during booms.

The Moderate Monetarist Critique of the Phillips-Curve Trade-off

Many economists believe that, while governments can successfully use discretionary monetary and fiscal policies to reduce the magnitude and frequency of business cycles, they cannot use these policies to reduce the average rate of unemployment over the full business cycle, as is implied by the Phillips-curve analysis. According to this view, the average rate of unemployment over the business cycle, measured with stable prices or a con-

stant rate of inflation, is the "natural rate of unemployment" and is determined by structural characteristics of the economy and workers' preferences for work and leisure. More specifically, the rates of technical change, output, and labor-force growth, the levels of unionization, legal minimum-wage levels, real wages, the level of competition in factor and goods markets, unemployment insurance and welfare payments, and many other factors determine the natural rate of unemployment. It therefore can be lowered only by appropriate changes in these structural characteristics, not by aggregate demand management.

Moderate monetarists believe that the Phillips-curve argument about the existence of an unemployment-inflation trade-off is based on an incomplete specification of the mechanism determining the division of increased aggregate demand into its components of increased real output and inflation. The missing element in the specification of the mechanism is expectations of workers about the future rate of inflation.

A monetarist would explain the Phillips-curve phenomenon, incorporating expectations in the proper way, as follows: Consider that, initially, price stability has prevailed for a long period of time and is expected to do so in the future. The labor market is in equilibrium in the sense that all unemployed persons are between jobs or voluntarily out of the labor force. Now, if the government is dissatisfied with this level of unemployment (and labor-force participation) and wishes to lower it, the Phillips-curve analysis suggests the need to increase aggregate demand through a permanently greater rate of increase in the money supply or by running a permanently greater government budget deficit. The initial results of these policies are that business inventories are lowered and generally favorable sales conditions cause firms to want to hire more workers. However, in order to do so, firms must offer higher wages, since the only people not working initially did not work because at the going wage rate they preferred leisure. The additional employment lowers the recorded rate of unemployment (raises labor-force participation) and increases the rate of growth of real output; the policy of aggregate demand expansion apparently has worked as predicted. But now comes the cost of the policy. Increased wage payments get reflected in higher prices of output after some time lag, and the resulting inflation reduces real wages. Workers who were lured into employment by higher real wages find that inflation has lowered wages again, and, since their basic work-leisure preferences are unchanged, they again leave employment. The nature of the unemployment-insurance laws induces and permits workers to hide the true motive for dropping out of the work force—to obtain unemployment benefits. As a result, the recorded rate of unemployment is raised temporarily above the natural rate, but as statutory limits in the length of unemployment-insurance payments are reached, the economy drifts back toward its natural rate of unemployment.

But now, because of the permanently greater rate of expansion of aggregate demand, the rate of inflation is positive. For example, with a balanced government budget and a rate of increase in the money supply of 2 per cent above long-run average growth in real output, the inflation rate will be 2 per cent per year.

If the government wishes to maintain the low unemployment level achieved by the initial increase in aggregate expenditure, it has to keep on increasing its rate of monetary and fiscal stimulation in order to maintain the excess demand for goods that is translated into demand for labor and continuously higher wages only because inflation lags behind. By pursuing these policies, the government can maintain a rate of unemployment below the natural rate, but only at the cost of accelerating inflation rather than at a steady rate as the simple Phillips-curve analysis implies. In the longer run, inflation accelerates to such an extent that its social cost exceeds the gains from greater employment and the government has to abandon its policies and return to a lower rate of increase in aggregate demand. However, this downward adjustment process occurs at great cost. Expectations about the rate of inflation are rooted in workers' minds; as wage rates fail to rise at the recently experienced pace and real income falls below normal, many workers prefer leisure at this real rate of pay. As a result, the recorded unemployment rate rises above the natural rate and the rate of growth in real output falls below the long-run average. The economy loses on the downturn what it gained on the upturn. In the presence of strong labor unions, the turnaround in government policies designed to lower the inflation rate is accompanied by disruptive strikes as workers attempt to protect their real incomes. Business, which faces falling demand for its output, resists the payment of higher wages. To the extent that business is forced into paying higher wages, prices of products continue to rise and the economy lives through a period of inflation combined with high unemployment and slow growth, the so-called cost-push inflation and stagflation.

After an economy has gone through a number of cycles of this sort, the public learns to expect inflation. Unionization and escalator clauses in wage contracts spread more widely, and the employment benefits from an acceleration of aggregate demand are smaller and smaller. The government attempts to reduce the strength, duration, and welfare costs of the cost-push inflation phase by initiating wage and price controls, higher unemployment and welfare benefits, and other nonmarket measures, leading to further changes in the structure of the economy and raising the natural rate of unemployment. Consequently, attempts to lower permanently the rate of unemployment through aggregate monetary and fiscal policies cannot succeed in the longer run and may actually raise unemployment.

The preceding analysis leads moderate monetarists to recommend that

aggregate-demand-management policies be aimed at the maintenance of price stability over the full business cycle, letting the average rate of unemployment go to its natural level. If the natural rate of unemployment is considered too high, policies should be aimed at increasing competition in factor and product markets, providing more labor-market information, eliminating minimum-wage laws, and other such structural changes.

This monetarist critique of Keynesian policy principles with respect to both short-run stabilization and the Phillips-curve trade-off is highly controversial, which is probably why so many economists and politicians consider economics to be in a crisis during the 1970s. The following analysis of the monetarist principles applied to the international economy is even more controversial and poorly understood.

2 International Monetarist Views

The division of Keynesian policies into those dealing with business cycles and those aimed at permanently lowering the unemployment rate can be applied also to the analysis of the most basic international monetarist proposition that all persistent imbalances of payments are due to increases in the money supply at a rate above that at which real economic output is growing.

The Balance-of-Payments Effects of Stabilization Policies

As a norm by which to judge the effects of government policies, we should consider a world in which all countries adhere to extreme monetarist principles for domestic demand management, letting the money supply grow at a steady rate equal to the average growth rate of real output and maintaining a balanced government budget over the full business cycle. In such a world, price levels in every country and in the world as a whole are stable. In the long run, countries' exchange rates are constant except for changes in the determinants of the real terms of trade known from the pure theory of international trade. For purposes of analysis, we assume that such terms-of-trade effects are so small over the time period under consideration that they can be ignored. As a result of business cycles and other disturbances, countries tend to experience temporary disequilibria in the foreign-exchange markets. These disequilibria are manifested as changes in reserves under fixed-exchange-rate systems, as exchange-rate fluctuations when rates are free to adjust, and as a combination of exchange-rate and reserve changes under systems of managed floating. But because of the fundamental price stability, reserve changes and exchange-rate fluctuations net to zero over time.

Now let us assume that governments attempt to use monetary and fiscal policy to reduce the amplitude and frequency of business cycles while continuing to aim successfully at price stability in the long run. Whether these

government policies are successful in stabilizing economies or whether they add to instability, as the monetarists claim, long-run average price stability assures that reserve and exchange-rate changes net to zero. We reach the important conclusion, therefore, that reserve or exchange-rate changes persisting over a long period must be due to government attempts to reduce permanently the rate of unemployment through monetary growth rates in excess of real-output growth rates. We now turn to a more detailed analysis of this proposition.

Fiscal Policy and Temporary Payments Imbalances

Let us assume that all the world's countries adhere to the principle of maintaining price stability over full business cycles except for the small Country A, which attempts to lower its unemployment rate by running a perpetual government budget deficit while keeping the money supply growing at a constant rate equal to its growth rate of real output. The country has a managed exchange rate and there are no short- or long-term capital flows.

The section above dealing with the monetarist critique of the use of fiscal policy to lower unemployment permanently in the closed economy gave a list of reasons why such a policy must fail in the long run: taxpayers reduce expenditures in order to finance debt service and repayment in the future, the private sector adjusts its capital formation to assure maintenance of the desired total social capital stock, and government financing crowds out private investment financing. These processes can be expected to take place in an open as well as a closed economy. In the long run, a permanent fiscal deficit cannot be expected to lead to a permanent increase in aggregate demand and therefore to a continuous balance-of-payments deficit, a depreciating exchange rate, or both. In the short run, we may expect the operation of some lags in the adjustment of public spending to the budget deficit and the consequent development of a balance-of-payments deficit. However, after the private sector adjusts fully, the deficit may turn into a temporary surplus or the country may end up with a permanently lower stock of reserves or higher price of foreign exchange. For present purposes of analysis, the main point is that in the longer run the permanent budget deficit will affect only the composition of national output and cannot lead to a permanent imbalance in the foreign-trade sector.

Monetary Policy and Permanent Payments Imbalances

Let us now assume that Country A attempts to achieve a lower unemployment rate by increasing its money supply at a rate n per cent above the long-run growth rate of real output, keeping its government budget balanced over the full business cycle.

Under these conditions, according to the monetarists, in the closed-economy case and in the long run, inflation is at the rate of n per cent per year, the nominal interest rate is n percentage points above the real rate of interest and productivity of capital, but the level of unemployment is at its natural rate. In essence, the change in the money supply has no significant long-run effect on the capital stock, society's rate of time preference, real wages, or labor's preference for leisure.

In an open economy in the long run and under freely floating exchange rates, domestic inflation must lead to a constant and continuous excess demand for foreign exchange, which is eliminated by the constant and continuous depreciation of the domestic currency at n per cent per year. This is so because in the long run money-supply increases affect only the price level but do not affect either comparative advantage or absorption expenditures. In my earlier analysis of monetarist views, I noted that if, in the closed-economy case, a country uses monetary policy to maintain an unemployment rate below the natural rate, it must raise continuously the rate at which it increases the money supply. Similarly, in the open economy under these circumstances, the inflation rate must accelerate and with it the rate of depreciation of the domestic currency. The inefficiencies and social problems associated with very high rates of inflation tend ultimately to force the abandonment of the policy goal of an unemployment rate below the natural rate and therefore an end to the acceleration in the rate of increase of the money supply.

In the case where a country manages its exchange rate rather than letting it float freely, the preceding analysis needs to be amended only slightly and in ways obvious from the study of the simpler cases. The excess demand for foreign exchange accompanying the increase in the money supply is to some extent financed by running down international-reserve holdings. In the longer run, this financing causes reserve holdings to fall below their desired normal level and exchange-rate devaluations are induced. The results are the same as under a freely floating exchange rate: persistent exchange-rate depreciation attributable to an excessively rapid growth in the money supply.

Reserve-Currency Country under Managed Exchange Rates

We now turn to the analysis of the monetarist view of international adjustment in a world of pegged but adjustable exchange rates in which one large reserve-currency country increases its money supply at a constant and continuous rate. This case is of particular historical interest since it describes the situation of the United States and the world in the 1960s and is believed to explain the worldwide inflation in the 1970s. As is well known from the discussion of postwar international monetary problems, the very large size of the U.S. economy and certain historically determined factors have made the U.S. dollar the primary form in which the countries in the rest of the world have

held their international reserves. As a result, during the 1950s and 1960s U.S. balance-of-payments deficits led to automatic increases in the aggregate supply of international reserves.

Given these characteristics of the international monetary system, let us consider what would happen if, after a period of price stability and balance-of-payments equilibrium among all countries in the world, the United States alone changed its basic policy and increased the money supply at a constant and continuous rate n per cent above the growth rate of real output in order to move toward a lower rate of unemployment. The continuous increase in the money supply would generate inflationary pressures and, with managed exchange rates, a balance-of-payments deficit. The role of the dollar as reserve currency means that the United States can finance its deficits without using international reserves and that deficits do not force the United States to an exchange-rate change as they would an ordinary small country. Consequently, the domestic price increases that accompany the increases in the money supply would not be offset by a corresponding continuous decrease in the exchange rate, and U.S. balance-of-payments deficits during the period would be continuous.

As a result of developments like these, countries in the rest of the world suffered from excess demand because of U.S. payments deficits, experienced balance-of-payments surpluses, and accumulated international reserves. In theory, countries in the rest of the world could have reacted to these events by letting their exchange rates appreciate continuously relative to the U.S. dollar and by keeping their domestic money supplies constant. That this would have been a technically feasible policy is seen most readily by assuming the existence of freely floating exchange rates. Under these conditions, the excess supply of dollars would have been eliminated continuously and smoothly through exchange-rate adjustments, and the inflation caused by increases in the U.S. money supply would have been confined to the United States.

In fact, however, countries in the rest of the world did not behave in this manner. Swept by the same notion as the United States that unemployment could be lowered by continuous increases in the money supply, these countries welcomed trade surpluses (or smaller deficits) with the United States as a stimulus to demand and welcomed the growth in their reserves in the form of dollars. As a result, U.S. deficits went on for longer than seems wise in retrospect and the world at the beginning of the 1970s was holding vast quantities of reserves in the form of U.S. dollars. For the world as a whole, these reserves are equivalent analytically to quantities of money in a closed economy. If they were excessively large, as some analysts claim, they induced countries to run payments deficits to get rid of them. But since all countries had the same objective, the only result was worldwide excess demand and inflation. Such a process can come to an end only when inflation has reduced the real value of

reserves to the desired amount relative to individual countries' incomes and payments instabilities, assuming there are no further continuous increases in reserves.

It follows that economists and especially politicians who believe that during the 1960s the United States should have behaved like any other country and devalued its currency in response to payments imbalances blame the U.S. government for the world inflation of the 1970s. The monetarist analysis attributes the U.S. inflation to excess money creation, but that need not have caused worldwide inflation. However, since the rest of the world did permit international reserves to grow, for whatever reason, worldwide inflation is perfectly consistent with the monetarist view, since in a world of managed exchange rates reserves play the same role as money and the world as a whole is a closed economy.

Some Casual Empirical Support of the Monetarist Views

The condition of some countries in Western Europe during the 1960s and 1970s is at least consistent with the international monetarist view of adjustment. During the 1960s, Britain was publicly committed to lowering the unemployment rate and accepting some necessary inflation through the alleged Phillips-curve trade-off. Above-normal increases in the money supply succeeded initially in raising employment because of money illusion and the existence of some nontraded goods. Eventually, however, prices rose, large trade deficits began to develop, and devaluations became necessary. After some time, money illusion disappeared and unions resisted the erosion of real incomes by making militant demands for rapidly rising wage rates. But it is nearly impossible to prevent reduced absorption altogether, if only as a result of imperfections in capital markets and lags between price increases and adjustments of factor payments. For example, high nominal interest rates accompanying inflationary expectations reduced the flow of resources to the housing industry and adversely affected other industries with heavy borrowing requirements and long investment gestation periods, such as high-technology industries. To prevent inefficiencies and inequities caused by these capital-market imperfections, the British government provided direct subsidies and increased the nominal money supply at increasing rates to prevent further rises in the interest rate. The monetarist model implies that this vicious circle has been caused by, and can be broken only by abandonment of, efforts to use monetary policy to achieve a permanent increase in employment over the natural rate of unemployment. Britain's experience was matched to some degree by that of Italy and France and, as I argued earlier, of the United States.

Two countries did not adopt the policy of attempting to reduce permanently the rate of unemployment. These two countries were Germany and Japan,

where the public was more concerned with maintaining price stability than with lowering the unemployment rate. The experience of these countries also is consistent with the monetarist model, since it involved rates of increase in the money supply below those in the rest of the world, consequent lower rates of price increases, upward valuations of currencies, and perpetual payments surpluses, all in a beneficial cycle.

It should be noted that this very cursory analysis of the experience of some countries in the 1960s and 1970s is only *consistent* with the monetarist view of the world. According to many economists, it is also consistent with many other explanations, such as the failure of the United States to finance the Vietnam War through appropriate tax increases, the militancy of unions growing for reasons other than inflation, the growth of the welfare state, conflict between the working and capitalist classes, and increasing costs of production because of diminishing stocks of the world's resources relative to the growth in demand. I cannot evaluate the merit of these explanations here. Monetarists would argue that such influences have existed throughout history and have been accompanied by either price stability or inflation, depending on monetary policy. Readers must judge for themselves the merit of these arguments.

3 Other Monetarist Analytical Approaches

In recent years, the traditional models of international adjustment based largely on Keynesian concepts have been criticized on a number of grounds that have nothing to do with these fundamental views of monetarists. In other words, such criticisms of traditional models are valid and should be acceptable to all economists whether or not they believe in the existence of a Phillips-curve trade-off and the effects of excess money creation on inflation. However, because these criticisms have been advanced most prominently by economists who also have advanced monetary views of the balance of payments, often in the same papers, they are now considered to be part of the monetary challenge to orthodox balance-of-payments theory. Thus, in the remainder of this essay I present a brief outline of these criticisms. I discuss first the implications of the traditional assumptions that goods markets are imperfect and that there are many nontraded goods. Second, I analyze the effects of the assumption of imperfect capital markets. I close with a consideration of the problems raised by the fact that imbalances of payments involve flows that are financed from stocks of reserves and that are determined by or influence domestic stocks of money.

Perfect Competition in Goods Markets

Orthodox international adjustment theory, going back to David Hume, suggests that an excess creation of money leads to the following sequence of

events in a country with a fixed-exchange-rate regime: increases in employment and domestic prices, followed by purchasing adjustments of traders to changed relative prices, ending in a trade deficit. Given such a sequence of events, the government can correct the payments imbalance by a devaluation that eliminates the relative price advantage of foreign goods.

A challenge has now developed to the validity of this analysis and the important policy implication that devaluation can be used to correct differential domestic and rest-of-the-world price-level increases. This challenge is based on the view that goods markets are so perfect and that traded goods produced in different countries are such near or perfect substitutes that, through cheap and efficient arbitrage, the prices of traded goods in all countries remain the same at the given exchange rates. This view, for which more and more empirical support is found, leads to a revised account of the sequence of events following an excess creation of money in a small country with a fixed-exchange-rate regime. Assuming that in the small country all goods are traded, the increased aggregate demand following the excess creation of money leads immediately to a balance-of-trade deficit, while domestic prices and employment remain unchanged. Because the trade deficit has to be financed by government sales of foreign exchange at the pegged exchange rate, the excess money created is equal to the loss of reserves.

The preceding analysis has been amended to take account of the fact that most countries have some nontraded goods and services, the prices of which can be raised by excess creation of money, so that there can be divergence of national price levels and some employment effects can take place. However, the extent to which a country can rely on the operation of these traditional adjustment processes depends on the size of the nontraded-goods sector and the elasticity of substitution between traded and nontraded goods. Since the size of nontraded-goods sectors of countries is an increasing function of the size of countries and has declined steadily in recent years with the revolution in transportation technology, many countries of the world, but especially of Western Europe, have, in fact, had little opportunity to influence domestic demand while maintaining fixed exchange rates. I conclude, therefore, that the traditional theory of international adjustment, which assumed implicitly that international goods markets were imperfect, nontraded-goods sectors were large, or both, should be amended to reflect the existence of perfectly competitive goods markets. This revision of the theory leads to the important policy conclusions that in a small country with a fixed exchange rate and a small traded-goods sector monetary expansion cannot lead to increased employment, and domestic inflation is entirely determined abroad.

In the light of the analysis presented in sections 1 and 2, it is easy to understand the further implications of these conclusions for the use of monetary policy to affect employment and the choice of an exchange-rate regime. The

spill-over of excess money creation into trade deficits can be avoided by the adoption of a freely floating exchange rate. But if the initial unemployment is at the natural rate, attempts to increase employment through monetary policy lead to domestic inflation and currency depreciation at rates equal to the rate at which the money-supply increase exceeds the growth in real output. This important conclusion about the inability to lower unemployment through monetary policy is the same as that reached above using the strict monetary approach. But the current model has as an analytical innovation not found in either the pure monetarist or the traditional Keynesian model, the empirically verifiable propositions about the perfection of goods markets and the size of nontraded-goods sectors.

Perfect International Short-Term Capital Markets

Some versions of the traditional models of the international adjustment mechanism emphasize that an increase in the money supply causes a fall in the interest rate and a subsequent increase in aggregate demand through higher investment. It has always been known that in an open economy the fall in the interest rate and resulting effect of a given amount of monetary expansion on aggregate demand depend on the interest elasticity of international short-term capital flows. Long before a monetary approach to the balance of payments had been identified, Mundell (1963) analyzed the implications of assuming that the interest elasticity of international short-term capital flows is infinitely large.

The results of his analysis are well known. When the exchange rate is fixed, the increase in money supply exerts downward pressure on the interest rate and induces short-term capital outflows and a loss of reserves exactly equal to the excess money creation, without any effects on employment or prices; when the exchange rate is freely floating, the increase in money supply exerts downward pressure on the interest rate, but the resulting capital outflows cause a drop in the exchange rate that in turn results in the development of a trade surplus and an increase in aggregate demand and employment.

This body of analysis has become increasingly relevant in recent years as international short-term capital markets have become integrated through institutional and technological developments such as multinational corporations, Eurocurrency markets, jet airplanes, computers, and communications satellites. More important for our purposes, however, the model can be readily extended to incorporate the concept of the natural rate of unemployment and the absence of a Phillips-curve trade-off. Our preceding discussions of these points make unnecessary a repetition of the analysis; we may simply state the conclusion that the increase in the money supply will not lead to a lower unemployment rate even if the country has freely floating exchange rates if initially the economy was at its natural rate of unemployment. The

excess demand created by the trade surplus leads to domestic price increases that offset the relative price advantage caused by the exchange-rate depreciation in the wake of the capital outflows. In long-run equilibrium the domestic inflation and exchange-rate depreciation offset each other and eliminate the trade surplus. The price level rises and the exchange rate falls at the rate by which the money-supply increase exceeds the growth in real output.

The Stock-Flow Relationships

The traditional Keynesian model of the international adjustment mechanism has as one of its crowning achievements the proposition that monetary and fiscal policy can be mixed in such a way that even in the presence of international short-term capital flows it is possible to achieve both internal and external balance. This model can be attacked on many grounds central to the monetary and fiscal policy arguments, as the monetarists have done.

However, the monetary and fiscal policy mix model can also be attacked on the fundamentally different ground that trade imbalances represent a flow while their financing affects stocks. Thus, if a country finances a trade deficit by a corresponding inflow of capital, its stock of indebtedness toward the rest of the world rises in every period. Analogously, a country's lending to the rest of the world increases with the financing of a trade surplus in every period. As these stocks of foreign indebtedness or credit grow, there must come a point where further credits are granted only at increasingly higher interest rates because of the risk of default. The traditional Keynesian monetary and fiscal policy mix models therefore need to be adjusted to include changes in the interest-rate elasticities of short-term capital flows induced by the growth in foreign indebtedness.

An important corollary to this analysis is the problem that servicing this growing stock of foreign indebtedness requires growing interest payments, which in turn have to be financed by short-term capital inflows. As a result, even in a static world interest-rate differentials have to be widened continuously to attract sufficient funds; if there are institutional barriers to the levels domestic interest rates can reach, the use of the monetary and fiscal policy mix for balance-of-payments purposes is constrained for reasons not previously recognized.

More generally, there have been criticisms of traditional international adjustment models for failing to distinguish between what has been called quasi or flow equilibrium on the one hand and true or stock equilibrium on the other. The preceding example of the problem of total short-term capital indebtedness is the best-known application of the principle, but it has also been used in connection with the demand for money and long-term assets.

These criticisms of traditional models are valid logically and empirically in the long run. However, in the short run, for which most policies are designed,

their empirical relevance is open to some question. The monetary and fiscal policy mix models imply that under fixed exchange rates internal and external balance can be achieved as a matter of long-run policy choice, but in the real world all countries' balances of payments are subjected continuously to random shocks of nature and to other government policies, originating domestically and abroad, so that few policy makers ever considered the prescriptions flowing from the mix model as providing anything but short-run solutions to short-run problems. Yet, under some circumstances, successions of short-run solutions can have empirically important stock effects, and the usefulness of the traditional international adjustment models for policy making undoubtedly has been increased by the consideration of flow and stock effects.

4 Summary and Conclusions

The monetarist challenge to the conventional Keynesian view of international adjustment emerges clearly and directly from the view of the monetarist school on domestic macroeconomic stabilization policies. According to this school, monetary and fiscal policies cannot permanently affect real variables in the economy. In the long run, rates of economic growth and unemployment are determined by market forces; fiscal policy can affect only the ownership of the capital stock, while monetary policy changes the price level. Cyclical instability of capitalist economies is due primarily to psychologically caused changes in demand for investment while the demand for money is stable. Cyclical instability is dealt with through the assurance of an orderly, steady growth in the money supply, since countercyclical monetary and fiscal policies affect aggregate spending only through lags of uncertain length and often are destabilizing rather than stabilizing. Efforts to move to lower average unemployment through planned acceptance of inflation must lead to accelerating inflation and ultimate failure.

This view of domestic macroeconomic stabilization policies has its counterpart in the international sphere. Under freely floating exchange rates, countries' trade balances would always be determined by the real forces underlying productivity and comparative advantage. In such a world, inflation in any one country and continuous depreciations of its currency are caused only by excessively expansive monetary policy, though observed relationships may be complicated by lags in adjustment and changes in wealth and reserve holdings. Under managed exchange rates, these propositions about the causes of inflation and exchange-rate changes are influenced by lags introduced through government behavior, but they are not changed basically. Inflation and payments imbalances of one country and worldwide inflation are caused by too rapid expansion of the money supply.

Do these arguments mean that we have to abandon our Keynesian tools of

analysis? Most economists will probably answer this question in the negative. After all, traditional Keynesian international adjustment models stress the importance of adjusting absorption to restore payments equilibrium and the fact that failure to do so leads to continuous devaluations. The Keynesian model implies that absorption can be reduced by lowering the money supply, which is perfectly consistent with the message of the monetarists.

However, the monetarist challenge should encourage Keynesian economists to expand their models to reflect properly the difference between nominal and real interest rates and in the process pay more attention to expectations about inflation and the real quantity of money. Most important, the monetarist challenge should lead to a fundamental re-examination of the proposition that the natural rate of unemployment can be reduced through monetary and fiscal policy and the acceptance of some finite positive rate of inflation. As Johnson (1972) put it, Keynes's dictum that we are all dead in the long run is valid but it does not permit us to pretend that therefore we can forever be making economic policies considering only their short-run effects. At some point, successions of short-run policies must have effects on long-run relationships. Acceptance of the monetarist argument that the Phillips-curve trade-off is not possible does not imply the necessary acceptance of the other monetarist prescriptions about the steady growth of the money supply and proscriptions against discretionary fiscal policy and freely floating exchange rates for stabilization purposes.

As a general methodological proposition about the relative merits of the traditional Keynesian and the monetarist models of the international adjustment mechanism, it is almost trivial to observe that if we had genuine general-equilibrium models and knew all the adjustment parameters empirically, the approaches would be equally valid. Of course, we do not have such theoretical and empirical models and precisely from this fact arises the need to simplify and theorize. The superiority of one theory over another is determined by their relative abilities to explain real-world phenomena and to predict the consequences of certain government policies. Judged from this point of view, the Keynesian traditional models, in the opinion of many economists, have failed badly in recent years. This phenomenon explains in part the widespread interest in monetarist models. But it is too early to reach a verdict on the greater ability of the monetarist than the Keynesian models to explain and predict consistently. There has simply been insufficient empirical work to reach a verdict on this question.

Perhaps the safest prediction about the future of the monetary models of international adjustment is that, like many other apparently revolutionary analytical tools and approaches, they will join economists' kits and increase our stock of knowledge of economics, but they will not lead to a fundamental revision of this stock.

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