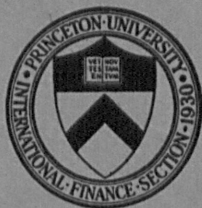


ESSAYS IN INTERNATIONAL FINANCE

No. 157, September 1985

INTERNATIONAL FINANCIAL MARKETS
AND CAPITAL MOVEMENTS
A Symposium in Honor of Arthur I. Bloomfield

WILFRED J. ETHIER AND RICHARD C. MARSTON, EDITORS
CHARLES P. KINDLEBERGER, JACK GUTTENTAG AND RICHARD HERRING,
HENRY C. WALLICH, DALE W. HENDERSON, AND RANDALL HINSHAW



INTERNATIONAL FINANCE SECTION

DEPARTMENT OF ECONOMICS

PRINCETON UNIVERSITY

Princeton, New Jersey

ESSAYS IN INTERNATIONAL FINANCE

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This Essay is a collection of five brief papers written in honor of Arthur I. Bloomfield. It was organized by two of his colleagues, Wilfred J. Ethier, who is Professor of Economics at the University of Pennsylvania and Editor of the *International Economic Review*, and Richard C. Marston, who is Professor of Finance and Economics at the University of Pennsylvania and a Research Associate of the National Bureau of Economic Research. They selected the contributors and participated in the editing of the Essay. We are grateful to them for taking this initiative and pleased to be able to join in honoring Professor Bloomfield, whose own work has been published by the Section.

PETER B. KENEN, *Director*
International Finance Section

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INTRODUCTION

Wilfred J. Ethier and Richard C. Marston

This collection of essays honors our friend and colleague, Arthur Bloomfield, on the occasion of his retirement from the University of Pennsylvania.

Unlike most economists, Bloomfield can boast of having pursued two successful careers, the first as Senior Economist and Officer of the Federal Reserve Bank of New York and the second as a respected scholar and popular teacher at the University of Pennsylvania. The scholars contributing to this symposium include present and former colleagues at these two institutions.

Bloomfield's career at the New York Fed spanned the years from 1941 to 1958. During this time he combined scholarly research on international financial and banking problems with active service (on leave from the Fed) as a member of various committees and commissions, both in the United States and abroad, and as a consultant and advisor to various central banks and institutions. This was the period when he produced his now classic book (1950) on U.S. capital inflows during the 1930s, as well as over a dozen scholarly articles on diverse aspects of central banking and international finance.¹ His activities as an economic advisor included several stints in Asia, where he helped establish central banks or advised on operations in Korea, Indochina, and Malaysia. His interest in Asia has remained keen since joining the University of Pennsylvania. He has made frequent return trips as a visitor or consultant to the Bank of Korea and to the Central Bank of Malaysia and has been honored on more than one occasion by these official institutions.

In the academic year 1957-58, Bloomfield, equipped with a grant from the Rockefeller Foundation, toured Europe and visited the various central banks. He has often described this trip as one of the high points of his life. Delving through long-neglected central-bank records, some of which even the banks themselves had not realized they possessed, Bloomfield acquired a deep understanding of how things had actually worked during the periods in which he was interested. One result was his authoritative and well-known monograph (1959) on monetary policy under the pre-1914 gold standard.

Bloomfield's career at the University of Pennsylvania, which began in 1958, has been similarly distinguished. He has consistently been one of the most popular teachers in the Department of Economics. In recent years, Bloomfield, like his teacher Jacob Viner, has applied his energies to the

¹ A bibliography of Bloomfield's scholarly works is included at the end of this symposium.

ing has become markedly more important since Herstatt, the market has sustained, with only minimal disruption, four major shocks of greater potential magnitude: the Latin-American debt crisis, the freezing of Citibank deposits in Manila, the collapse of Banco Ambrosiano, and the run on Continental Illinois National Bank. Yet the last shock required dramatic intervention by the Federal authorities. They could not afford to let market discipline determine the fate of Continental, since other banks would have suffered as a result of a default, either directly because of deposits at Continental or indirectly because of the chain reaction to a major default. This sort of intervention, however, removes the incentive of the market to monitor banks' performances and gives large banks an unjustified advantage over smaller banks.

Capital flows, regardless of type, integrate national economies much more fully than do trade flows. Henry Wallich, a member of the Federal Reserve Board, investigates the extent of this financial integration and its implications for the conduct of national policy, and he focuses on the way that flexible exchange rates modify the effectiveness of monetary policy. In one sense, flexible rates free monetary policy from international constraints; there are no flows of foreign-exchange reserves to offset domestic monetary policy. But Wallich argues that flexible rates may speed up the economy's response to monetary-policy initiatives. In fact, the ultimate consequences of such monetary initiatives may be telescoped into the present by expectations. Thus an expansion of the money supply, if interpreted as the start of a longer-term change in policy, may provoke a depreciation of the domestic currency larger than the monetary expansion itself.

Wallich also discusses international monetary coordination under conditions of near complete capital mobility. He analyzes the recent proposal of Ronald McKinnon that the United States, Germany, and Japan target their national money supplies on exchange-rate stability in a way that would help stabilize the world money supply. Wallich objects to this proposal because it assigns no role to domestic targets. Targeting on the exchange rate, he argues, would subject the domestic money supply to something approximating a gold-standard rule. This point recalls Bloomfield's own work on monetary policy under the gold standard. The so-called "rules of the game" required that the domestic assets of a central bank rise or fall with gold reserves. In a notable study (FRBNY, 1959), Bloomfield established that domestic assets were *negatively* correlated with gold reserves because discount loans responded endogenously to gold flows. A contraction of the domestic monetary base due to a gold outflow induced additional discount borrowing from the central bank. Bloomfield also found, however, that discount rates were positively correlated under the gold standard. Govern-

ments made conscious efforts to shield their balances of payments from foreign monetary initiatives. In other words, the high mobility of capital forced governments to react to foreign monetary initiatives before these could cause inordinate drains on foreign-exchange reserves. Wallich finds a similar sort of behavior under flexible rates. Governments contract their own money supplies in order to prevent depreciations of their currencies in response to foreign monetary contractions.

In the late 1960s, the portfolio approach to capital movements was offered as an alternative to earlier capital-flow formulations such as Bloomfield's. Dale Henderson of the Federal Reserve Board convincingly demonstrates that Bloomfield's formulation is fully consistent with this portfolio approach. The specific problem that Henderson studies is one Bloomfield had analyzed in his 1950 book, the effect of autonomous capital flows involving bank deposits rather than securities. Bloomfield had observed that a significant proportion of the capital inflow into the United States in the late 1930s involved increases in foreigners' holdings of dollar deposits at U.S. banks. Because such capital flows lead to corresponding increases in the banks' demand for high-powered money, they are less likely than other capital flows to generate changes in income and interest rates that work to reequilibrate the balance of payments.

Thus Bloomfield's analysis focused on the balance-of-payments impact of an autonomous capital flow, asking whether the flow could generate offsetting balance-of-payments flows. Following more recent practice, Henderson asks whether an autonomous capital flow will stabilize or destabilize macroeconomic variables such as output and prices. The difference in perspective, as Henderson points out, affects the interpretation of results. From the perspective of stabilization theory, for example, sterilized intervention can be helpful. From the alternative perspective of the balance of payments, it is unhelpful because it leads to an even larger change in foreign-exchange reserves than does nonsterilized intervention.

The last contribution to this symposium, by Randall Hinshaw of the Claremont Graduate School, considers the effects of a continuing monetary expansion and the role of the exchange rate in facilitating adjustment. He examines an expansion used to finance a transfer payment and shows that the effects depend on the composition of domestic output. If all goods are traded and prices are flexible, a country can choose between a continuing balance-of-payments deficit, equal to the increase in the domestic assets of the central bank, or a depreciation of the domestic currency at the same rate as the monetary expansion. If the economy produces nontraded goods, the monetary expansion will require a change in relative prices under a fixed exchange rate. Thereafter, the expansion will lead to offsetting bal-

ance-of-payments flows, just as before. Under a flexible rate, however, the depreciation of the domestic currency reequilibrates the relative prices of traded and nontraded goods.

We take pleasure and pride in presenting this symposium to Bloomfield. We are sure that his retirement will not mark the end of a distinguished career but the beginning of yet another phase.

THE FUNCTIONING OF FINANCIAL CENTERS:
BRITAIN IN THE NINETEENTH CENTURY,
THE UNITED STATES SINCE 1945

Charles P. Kindleberger

After a brief dispute in an initial encounter in 1949, when I tried to defend myself against the accusation that I had been mistaken in thinking that an increase in exports could result in an import surplus (1949), Arthur Bloomfield and I have had (for me) a most intellectually profitable relationship. I have the memory that I won the early argument, but doubtless he feels equally sure that he did. Since then, however, I have been a continuous winner, learning from his work on the gold standard, capital movements, Adam Smith, and kindred subjects. It is a great pleasure to honor him by searching for the similarities and differences between the role of London in serving as the pivot of the world's monetary system in the era that ended in 1913 and the role of New York (plus Washington) in the era that began in 1945 and may have ended in 1971, or perhaps not yet.

I choose to order the analysis in terms of five functions appropriate to a world financial leader. In *The World in Depression, 1929-1939* (1973, p. 292), I listed three such functions: (1) providing a market for distress goods and, conversely, a supply of goods that have become acutely scarce; (2) maintaining a steady flow of capital from the center to the rest of the system; and (3) acting as a lender of last resort in crisis. Since that book I have added two more tasks that the center should discharge: (4) coordinating exchange rates; and (5) coordinating macroeconomic policies (1981, p. 312). I will address these functions here in a somewhat different order, putting trade first, then capital flows, exchange rates, and monetary policy, leaving the lender-of-last resort function until the end.

Maintaining a Market for Distress Goods

Britain adopted virtual free trade in the 1840s and 1850s. The crucial step is often regarded as the repeal of the Corn Laws in 1846, but parts of the process were the reforms of 1842 that struck many duties off the books, repeals of the timber duties and the Navigation Acts, plus the final reduction of duties under Gladstone in the 1850s to those for revenue only. Like the United States a century later, Britain pushed hard for freer trade on the Continent, although it did not insist on reciprocity. When the Continent deserted the free-trade standard, beginning in 1879 in Germany and successively thereafter in France, Italy, and Sweden, Britain hung on.

Cheap wheat was allowed to depress agriculture. The Chamberlain movement for imperial preference was defeated at the turn of the century. So internalized became the ideology of free trade that the Labor Party won an election defending free trade as late as 1924.

Britain's adherence to free trade was necessary for the system because it provided a market for distress goods and a market for thrusting new goods or new producers.

The obverse of a market for distress goods, a supply of goods to share out in periods of acute scarcity, was necessary only once during the nineteenth century, in the potato famine of 1846 that coincided with the shortest grain crop in 100 years. Britain took no action, leaving the matter to the market, largely on ideological grounds (Woodham-Smith, 1962). The price of wheat did in fact collapse in the panic of 1847.

The movement toward freer trade in the United States is generally dated from the passage of the Reciprocal Trade Agreement Act of 1934, though the early agreements under that legislation were of little importance. During World War II the United States signed up its Allies to commitments to lower duties,¹ and immediately after the war set out to reduce tariffs all around by successive rounds of reciprocal reductions under the General Agreement on Tariffs and Trade.

More important immediately was the continuation of arrangements to share goods in short supply. The various allied Combined Boards were continued for a time. Provision of supplies through UNRRA was dominated by contributions from the United States, 72 percent in the first tranche, 78 percent in the second. Post-UNRRA relief, Interim Aid, and then the Marshall Plan continued the process. After the end of the Marshall Plan, while the United States was finding a place for thrusting new goods from Japan, many of which were kept out of Europe, it alleviated periods of tightness in primary products by selling off defense stockpiles or disposing of surpluses accumulated under the agricultural-support programs. These policies of sharing in tightness came to an abrupt end in the summer of 1971 when President Nixon cut off the export of soya beans to Japan to hold down the American price—the so-called “Nixon *shocku*.” Still later, when OPEC embargoed the sale of oil to the Netherlands, no country—not the United States, not the Common Market, nor the OECD—undertook to share supplies with the Netherlands. The task was taken on by the multinational oil companies, which reshuffled supplies. The governmental function of crisis management was handled by private enterprise.

¹ During the Napoleonic Wars, Britain had made an effort to get the powers it provided with subsidies to lower their tariffs on British goods. It had modest success with Prussia, but none with Austria, Spain, or Russia (Sherwig, 1969, pp. 311-313).

Capital Movements

At the end of World War II, League of Nations experts argued that capital movements from surplus countries should be organized in countercyclical fashion, with the center lending more when it was buying less, and vice versa (1949). This proved to be a counsel of perfection; and the World Bank, for example, quickly asserted that it was impractical (1949).

In the years from 1850 to 1913, the pattern of capital movements from London was not stable. Cairncross (1953) and Rostow (1950) believe that the cyclical flow was governed by the terms of trade, which served as a proxy for the relative profitability of investment at home and abroad. Higher import prices meant higher profits for foreign investment, and hence led to capital outflows. Lower import prices served conversely as an incentive to invest at home. If this model had been followed consistently, which was not the case (Kindleberger, 1982), foreign lending by Britain would have been countercyclical in terms of British economic activity, but it would have accentuated the instability of the balances of payments of the countries of the periphery, because foreign investment would have been positively correlated with booming exports. In fact, there were occasions when foreign lending was positively correlated with domestic investment—from 1823 to 1826, in the 1850s, from 1885 to 1890, and from 1905 to 1913. The pattern of British lending was especially destabilizing from 1885 to 1893—rather like U. S. lending after the Dawes loan of 1924, which was abruptly cut off by the stock-market rise in 1928 (Bloomfield, 1950).

When most foreign lending flowed abroad through new issues and purchases of existing securities, there was virtually no possibility of a country regulating the outflow through policy action. Governments had no means of stimulating private purchases and sales of new or outstanding securities, and restrictions on outflows had not yet been developed. At the Bretton Woods conference in 1944, the United States with others established the IBRD (World Bank) with the function, as already noted, of lending countercyclically. It was thought that private capital movements would be small, limited by exchange and other risks, or that if they developed in dysfunctional directions, they would be controlled by government measures taken for balance-of-payments purposes. Thereafter, intergovernmental banks were established regionally for Latin America, Asia, and Africa.

An attempt was made to restrict private capital movements when the United States thought its balance of payments was experiencing massive deficits toward the end of the 1950s and especially in the 1960s, though this observer among others thought the problem lay largely in a mistaken concept of how a deficit should be defined for a country that acted as a

bank to the world (Kindleberger, 1965). A series of actions was taken under the presidencies of Kennedy and Johnson, but they were canceled under President Nixon.

In the 1960s, a Eurocurrency market, initially in dollars, grew up by accident. Regulation Q of the Federal Reserve Board restricted interest rates payable on time deposits in the United States. Accordingly, funds were shifted from New York to the European offices of the same U.S. banks, where they could earn a higher return. Controls on U.S. capital outflows further contributed to the development of the Eurocurrency market and of the Eurodollar bond market outside U.S. jurisdiction.

The Eurocurrency market took an enormous leap forward in 1970 and 1971, when the Federal Reserve Board, under the chairmanship of Arthur F. Burns, sought to lower interest rates—a move frequently ascribed to Nixon's run for re-election in 1972—at the same time that the Bundesbank was trying to raise rates in the Federal Republic of Germany to restrain inflation. Funds poured out of the United States to the Eurocurrency market, where they were borrowed by Germans, sold to the Bundesbank, and redeposited by the latter in Eurocurrency banks. The U.S. current account was adverse, and speculation against the dollar took place. But the "deficit" of the United States, which had been \$2 to \$4 billion a year, leapt up to \$20 billion in 1971 and \$30 billion in 1972, mainly because of recycling. Eurobanks were awash with money and started forcing loans on Latin America and other borrowers, well before the oil shock of November 1973. Lending picked up with the oil shock, as oil exporters deposited their rapidly rising profits in the Eurodollar market, where they were borrowed by oil importers. The system was slowing down again when the second oil shock in 1979 started the process anew. In 1982 most of the banks realized that the lending had been overdone, and many were about to call a halt. The International Monetary Fund and the U.S. administration applied pressure to the banks to maintain their loans in the third world and even to increase them in the interest of world stability. Bank loans to sovereign countries have the disability that if default occurs, there is danger to the banking system—something not involved in private lending through the bond market. It has the advantage, however, that commercial banks may be persuaded to renew old loans and even extend new loans in the general interest when a concerted attempt to collect outstanding obligations would run the risk of inducing sharp deflation, widening default, and banking collapse.

Under neither the British nor the American management of the world financial system, then, has the task of stabilizing the international flow of long- and intermediate-term capital been handled successfully.

Exchange Rates

I share the widely held view that the gold standard of the age before World War I was essentially a sterling standard, although Bloomfield (1963, p. 93) is skeptical and calls the "stereotype" an "oversimplification." Nevertheless, it had the advantage of appearing to be an impersonal system, legitimate because ordained by ancient usage dissociated from a particular country. The price of gold in sterling had been fixed by Isaac Newton, Master of the Mint, in 1717, restored in 1819 after the Bank suspension of 1797, and restored again in 1925 after suspension in August 1914. Interruptions in convertibility of the livre and the French franc had been more frequent—during the French Revolution and the Napoleonic wars, in 1848, and again from 1871 to 1879—but even in the case of France, the reference price of gold to which return was sought remained constant for two centuries after 1726.

The Bank of England managed the pound sterling in terms of gold, developing central-bank policy to this end as it learned to manage its discount rate, and seeking help from other banks in times of crisis—on which more below. At the pinnacle of fine tuning in the turbulent year 1873, the Bank changed its discount rate twenty-four times in twelve months. Other central banks used different techniques. The Bank of France used discount policy to manage its currency for only a brief period after 1856 before turning to manipulation of the gold and silver points. During financial crises in 1856 and again in 1864, France narrowly missed having to abandon convertibility. The tenacity with which the Bank of France clung to convertibility, in part at the insistence of the government, reveals how widespread was the belief that stability of exchange rates was a good.

The 1930s experience with competitive exchange-rate depreciation led the United States to write fixed exchange rates into the Bretton Woods agreement, forcing the pace in international monetary affairs after World War II. Just as the sterling standard was disguised as the gold standard, so the dollar standard masqueraded as the Bretton Woods system. The pressure to maintain exchange rates was, to be sure, less exigent than under the gold standard. In 1949 and again in 1958, tiers of countries devalued against the dollar. Until 1968 the United States kept the dollar fixed in terms of gold, while other countries sought less successfully to keep their currencies fixed in terms of dollars. Giving up on gold *de facto* in 1968, the United States was determined by 1971 to have the dollar depreciate against other moneys. The anchors of the system having been cut away, flexible exchange rates were adopted in the spring of 1973 as separate countries

sought to free balances of payments and domestic macroeconomic policies from events and policies elsewhere.

A number of economists praised flexible exchange rates as a first-best policy, analogous to price flexibility in a single market in partial equilibrium with no feedbacks. Under Nixon, Ford, and Reagan, Republican administrations—as well as the intervening Democratic administration of Carter—held to a view that neither the U.S. interest nor world concerns were affected by what happened to the dollar. Neglect of its value in terms of gold and other currencies was held to be benign. For a time a number of economists believed that a freely floating exchange rate automatically converges to the purchasing-power parity, equalizing price levels in various countries; while nominal exchange rates might fluctuate, real rates would not. Experience revealed this belief to be hollow. Lags, feedbacks, under- and overshooting, and capital flows that appeared to ignore exchange risk disabused the economic world of belief in the merits of clean floating. A variety of proposals have been advanced to restore order to exchange markets: leaning against the wind, or countering what appear to be speculative flows; crawling pegs to limit short-run movements but encourage adjustments on trend; wide bands involving the reverse, i.e. substantial variability in the short run but broad stability in the long; target zones; and surveillance of intervention policies to prevent competitive depreciation or appreciation. The U.S. government has expressed little interest in any of these nostrums and has gradually given up intervention in the exchange market except for countering a sharp adverse movement on October 31, 1978, that threatened to lead to panic.

In a word, after an extended period of holding the dollar steady in terms of gold and encouraging other countries to stabilize in terms of the dollar, the United States has abandoned managing exchange rates. Increasingly today economists believe that the wide-ranging movement of exchange rates is destabilizing national economies but that there must be greater convergence of macroeconomic policies before exchange rates can be rendered more stable. Yet national tastes involving tradeoffs among inflation, full employment, income redistribution, and the like differ, so that there is little chance of achieving convergence in the near future. One farsighted economist believes that stability will be wanted and will have been achieved by 2010—twenty-five years from now—but is unable to visualize the route by which it will be achieved (Cooper, 1984). A few idiosyncratic observers advocate a return to the gold standard, though most doubt that Humpty-Dumpty can be put back together again. In the meantime, one function of a leading financial center is not being met, since the United States has lost interest in exchange-rate management.

Coordination of Macroeconomic Policies

The conventional wisdom has it that macroeconomic policies are automatically coordinated under the gold standard. To the extent that budgets are always balanced, that monetary policies are subordinated to the gold-standard rule, and that employment is ignored, there is an element of truth in this view. But under the gold standard other policies came into play to regulate the balance of payments, such as manipulation of gold and silver points. Moreover, monetary episodes occurred with no relation to gold. The conversion of British war debt in 1823 and the Goschen conversion of 1888, foreshadowed in 1886, both led to booms in foreign and domestic lending as investors tried to maintain investment incomes and bought higher-yield, high-risk investments. Some correlation of expansion and contraction in various countries took place through changes in gold and silver production—what is called today “world monetarism”—and some counterpoised movements took place through flows of monetary gold.

Between the wars, a notorious effort at coordination took place on July 1927 at a meeting at his Long Island home of Ogden Mills, U.S. Secretary of the Treasury, with Montagu Norman, Charles Rist, Benjamin Strong, and Hjalmar H.G. Schacht, central bankers from London, Paris, New York, and Berlin respectively. The purpose of the meeting was to relieve the pressure on Britain. The Federal Reserve Bank of New York agreed to lower its discount rate, and the Bank of France and the Reichsbank agreed to take gold from New York rather than from London. The first of these actions is thought by some to have been fateful in stimulating the rise of the stock market, which gathered momentum in New York in the late spring of 1928, diverting U.S. investment from foreign bonds to domestic stocks and possibly producing the crash in October 1929. Close central-bank cooperation continued until the end of the boom but broke down during the depression (Clarke, 1967).

One forum for macroeconomic coordination, or at least for exchanges of information making such coordination possible, if not committing anyone to carry it out, was the Bank for International Settlements (BIS), set up under the Young Plan of 1930 to assist in transferring German reparation payments to the Allies. Within little more than a year its primary function had succumbed to the Hoover moratorium of June 1931. The Bank survived, however, as a central bankers' club where information was exchanged at monthly meetings.

The Bretton Woods agreement made no provision for coordination of monetary policy, but the Organization for Economic Cooperation and Development (OECD) did so in Working Party No. 3. For years this met regularly but at a fairly low level, with representatives of treasuries, central

banks, and such bodies as the Council of Economic Advisers, explicitly to exchange information on macroeconomic policy and to encourage cooperation. Ministerial meetings at the OECD presented further opportunities for ministers of finance to work out coordinated strategies. In January 1966, Secretary of the Treasury Henry H. Fowler met with other ministers of finance at Chequers in England in an unsuccessful effort to get them to agree to lower interest rates in the Atlantic community as a whole.

More and more, macroeconomic policy has been elevated to the summit level of seven heads of state—Britain, Canada, France, Italy, Japan, the United States, and West Germany—but without notable achievement. Under President Carter, a U.S. effort was made to get the leading countries to expand in concert as locomotives to pull the train of world economic recovery. Europe and Japan objected to the concept because they feared inflationary consequences, and they held back. At recent summits attended by President Reagan, there has been pressure from Europe on the United States to change its policy mix—tightening fiscal policy so that monetary policy could be relaxed, interest rates lowered, the inflow of capital reduced, and the dollar weakened. The European leaders thought, as did many U.S. observers, that this would improve the U.S. balance of payments on current account. The European objective, however, was appreciation of their own currencies and relief of inflationary pressure. But the Reagan Administration opposed the two major possibilities for reducing the federal budget deficit—higher taxes and reductions in defense spending—and hence agreement could not be reached. Largely because of the diffusion of economic power in the world, coordination of economic policy becomes more and more difficult, despite the fact that it is sought at the highest political level.

Lender of Last Resort

In earlier writing (1973), I maintained that the absence of an international lender of last resort in 1873, in 1921, and in 1929 made the depressions flowing from financial crises deeper and more prolonged than they need have been. To this list I would now add the depression from 1890 to 1896, which did get help in the form of a *deus ex machina*, the gold discoveries of the Witwatersrand. My instinct tells me, though I cannot prove it, that the reason that this discovery had no immediate effect, by contrast with those of 1849 and 1851, was the decline in world investment caused by the cutoff of British and European lending to the periphery (Kindleberger, 1984). It should be noted that my view of 1921 and 1929 is not universally accepted, and that Moggridge (1982), in particular, believes that sustained

recovery after World War I required more thoroughgoing structural adjustment, of the sort provided after World War II by the Marshall Plan.

Under the gold standard with Britain as the pivot, Britain came to the aid of France in commercial and financial crises in 1848 and 1860. France also served as lender of last resort, however, helping Britain with credits or with swaps of gold against silver, in 1825, 1836, 1839, 1890, and 1907. Other help was furnished London on a couple of these occasions by the Bank of Hamburg and the State Bank of Russia. The amounts were small in all cases, because the volume of internationally mobile liquid funds was limited, but they were large enough to restore confidence in the stability of the system.

Bretton Woods made no provision for a lender of last resort. Assistance from the IMF was to be furnished in widely spaced amounts for persistent balance-of-payments deficits on trade account. Capital movements were to be subject to controls. Slowly it was realized that it was difficult to separate capital movements from trade because of financing leads and lags, and the rules were modified to furnish countries with standby credits, helping to build confidence in a currency's exchange rate. Credit was provided in successive tranches for twelve-month periods separated only by a day, so that in a space of two days a country could gain two years' access to assistance. In 1960, the leading financial countries formed the Group of 10 to furnish additional liquidity for the IMF in periods of financial crisis. All this, however, was far from the lender-of-last-resort function developed by the Bank of England in the eighteenth and nineteenth centuries and rationalized by Bagehot (1873).²

The United States provided adjustment assistance to the world after World War II by a variety of means too familiar to require recital. The lender-of-last-resort function did not develop, however, until the British difficulties of early 1961. These gave rise to the swap network, concluded in the Basle agreement. Under this arrangement, a country in trouble from a sharp capital outflow could swap its currency with one or more central banks against foreign exchange that it could use in support of its currency. If the availability of this foreign exchange impressed the market sufficiently to halt the drain and the capital returned, the swaps would be reversed after three or six months. Any balances not reversed at the end of the stated time were funded through the IMF. The idea was not entirely new. It had been put forward, but by academic people rather than financial authorities, in 1866 (Chevalier in *Ministère des Finances*, Vol. 6, 1867, p. 184), and

² The term "lender of last resort" was introduced into the language, so far as I can determine, by Sir Francis Baring with the crisis of 1797 and was thoroughly understood and appreciated by Thornton in his classic *Paper Credit* (1802).

two-thirds of a century later by a Danish economist (Pedersen, 1934, p. 132).

The swap network was based on trust among the leading financial countries. It was not conditional. It did not extend to the third world, since the leading financial centers were not persuaded that these countries could be counted upon to reverse swaps without fail. In 1976, moreover, when Britain, which had been helped on several earlier occasions, did not appear to be correcting its position, other countries shifted their aid from the swap network to the IMF, which imposed formal conditions (Crawford, 1983).

The IMF is by no means an ideal lender of last resort. Its decision-making processes are cumbersome and time-consuming, whereas many financial crises require immediate measures. Bridging loans from the BIS, the Federal Reserve Bank of New York, the U.S. Treasury, or the various Latin-American countries may be used to buy the time needed to swing the IMF into action, but they are awkwardly *ad hoc*. Moreover, the IMF cannot create money as a central bank can. Its limited resources transgress the Bagehot rule of lending freely, if at a penalty rate. As this is written, the task of rescuing countries in financial crisis has become convoluted.

In conclusion, the world seems to be approaching another period like that between the wars when the public good of world economic stability is no longer being provided by a leading financial center, alone or with help, with or without the disguise of a gold standard or a Bretton Woods system. The United States is increasingly unwilling to accept imports, partly because of the subsidy to imports from its own overvalued exchange rate. Attempts to sustain the flow of long-term capital by bank loans to the third world meet resistance. The system of exchange rates has become unsatisfactory to the major financial centers without eliciting a consensus on how to restore coherence. Coordination of macroeconomic policy is sought, but leadership in international relations is insufficient to achieve it. The lender-of-last-resort function limps along.

So far so good. No country or countries see gains from rocking the boat or deliberately exploiting the disorder. The world has a bear by the tail. It hangs on.

References

- Bagehot, Walter, *Lombard Street: A Description of the Money Market*, London, 1873; reprinted in N. St. John-Stevass, ed., *The Collected Works of Walter Bagehot*, London, The Economist, 1978.
- Bloomfield, Arthur I., "Induced Investment, Overcomplete International Adjustment, and Chronic Dollar Shortage," *American Economic Review*, 39 (September 1949), pp. 970-975.

- , *Capital Imports and the American Balance of Payments, 1934-39: A Study in Abnormal International Capital Transfers*, Chicago, University of Chicago Press, 1950.
- , *Short-Term Capital Movements under the Pre-1914 Gold Standard*, Princeton Studies in International Finance No. 11, Princeton, N.J., Princeton University, International Finance Section, July 1963.
- Cairncross, Alec, *Home and Foreign Investment, 1870-1913*, Cambridge, England, Cambridge University Press, 1953.
- Clarke, Stephen V.O., *Central-Bank Cooperation, 1924-31*, New York, Federal Reserve Bank of New York, 1967.
- Cooper, Richard N., "Is There a Need for Reform?" paper delivered to the Federal Reserve Bank of Boston Conference on the International Monetary System: Forty Years after Bretton Woods, Bretton Woods, N.H., May 18, 1984.
- Crawford, Malcolm, "High-Conditionality Lending: The United Kingdom," in John Williamson, ed., *IMF Conditionality*, Washington, D.C., Institute for International Economics, 1983, pp. 421-439.
- International Bank for Reconstruction and Development, Press Release #134, May 11, 1949.
- Kindleberger, Charles P., "The Foreign-Trade Multiplier: The Propensity to Import and Balance-of-Payments Equilibrium," *American Economic Review*, 39 (March 1949), pp. 491-494.
- , *Balance-of-Payments Deficits and the International Market for Liquidity*, Essays in International Finance No. 46, Princeton, N.J., Princeton University, International Finance Section, May 1965.
- , *The World in Depression, 1929-39*, Berkeley, University of California Press, 1973.
- , *International Money: A Collection of Essays*, London, Allen & Unwin, 1981.
- , "The Cyclical Pattern of Long-Term Lending," in Mark Gersovitz et al., eds., *The Theory and Experience of Economic Development: Essays in Honor of Sir W. Arthur Lewis*, London, Allen & Unwin, 1982, pp. 300-312.
- , "International Propagation of Financial Crises—The Experience of 1888-93," in Wolfram Engels, Armin Gutowski, and Henry C. Wallich, eds., *International Capital Movements, Debt and Monetary System*, Mainz, Hase & Koehler, 1984.
- League of Nations, *Economic Stability in the Postwar World*, Lake Success, N.Y., United Nations, 1949.
- Ministère des Finances et Ministère de l'Agriculture, du Commerce et des Travaux Publics, *Enquête sur les principes et les faits généraux qui régissent la circulation monétaire et fiduciaire*, Paris, Imprimerie Impériale, 1867.
- Moggridge, D. E., "Policy in the Crises of 1920 and 1929," in Charles P. Kindleberger and Jean-Pierre Laffargue, eds., *Financial Crises: Theory, History and Policy*, Cambridge, England, Cambridge University Press, 1982, pp. 171-187.
- Pedersen, Jørgen, in League of Nations, *The State and Economic Life*, Sixth International Studies Conference, Paris, 1934.

- Rostow, W. W., "The Terms of Trade in Theory and Practice," *Economic History Review*, 2nd Series, 3 (August 1950), pp. 1-17.
- Sherwig, John M., *Guineas and Gunpowder: British Foreign Aid in the Wars with France, 1793-1815*, Cambridge, Mass., Harvard University Press, 1969.
- Thornton, Henry, *An Enquiry into the Nature and the Effect of the Paper Credit of Great Britain together with the Evidence*, 1802; reprinted in F. A. Hayek, ed., London, Allen & Unwin, 1939, and London, Frank Cass, 1962.
- Woodham-Smith, Cecil, *The Great Hunger*, New York, Harper & Row, 1962.

FUNDING RISK IN THE INTERNATIONAL INTERBANK MARKET

Jack Guttentag and Richard Herring

Introduction

Much of our colleague Arthur Bloomfield's work has focused on the international ramifications of monetary policy. His insights on international capital flows have influenced the research of several generations of scholars and have affected the conduct of monetary policy, particularly in the several countries in which he has advised central banks. Our contribution in his honor examines the impact of a major component of international capital flows—international interbank transactions—on an important prudential aspect of monetary policy, the liquidity of individual banks. Our objective is to evaluate how the development and widespread use of the international interbank market has affected the vulnerability of the international banking system to major liquidity shocks.

Our analysis will focus on one key function of the interbank market, the facilitation of liquidity adjustments by individual banks. Of course, the international interbank market, which comprises interbank claims far in excess of \$1 trillion,¹ serves many additional functions. Interbank flows help equilibrate financial markets that might otherwise be segmented, facilitate adjustments of individual banks to interest-rate risk and foreign-exchange risk, and enable banks to arbitrage between different regulatory and tax jurisdictions. For a discussion of these functions, see BIS (1983), Dematte (1981), Giddy (1981), Guttentag and Herring (1984a), Herring (1984), Kreicher (1982), McKinnon (1977), Niehans and Hewson (1976), and SEC (1982).

The major prudential concern regarding the international interbank market is that it may be a source of contagion through which the problems of one bank are transmitted rapidly to other banks. This can happen in two separate but related ways. First, if bank A becomes insolvent, bank B may be in jeopardy if its claims on bank A are a significant proportion of its capital. This is interbank credit risk. Our focus here, however, is on the

¹ For banks in Europe, Canada, and Japan, interbank claims in foreign currencies were 70 percent of all foreign-currency claims in 1981, while for loans denominated in the domestic currency of the lending bank, the proportion was 54 percent (BIS, 1983, p. 18). For U.S. banks, whose cross-border claims are largely in U.S. dollars, about 70 percent of total claims are interbank (Clarke, 1984, p. 6). Excluding claims against banks' own offices abroad, the figure drops to about 50 percent (see Federal Reserve Bulletins, Table 3.19).

second way in which problems in one bank can jeopardize the soundness of other banks: interbank funding risk.

Interbank funding risk is the danger that a bank dependent on access to the interbank market for liquidity will lose access to that market. Suppose that bank A gets into trouble because of heavy exposure to a nonbank that defaults, causing market participants to question its solvency. Bank A may find it difficult to roll over its interbank deposits, and its problems may spill over to bank C if other banks fear that bank C is exposed to the same nonbank borrower as bank A or has a large concentration of claims on bank A. These fears may or may not be justified. Interbank funding risk is, of course, only one aspect of liquidity risk; but it is sufficiently important and has such unusual features that it warrants separate treatment.

Liquidity Adjustment and Liquidity Positions

A bank's liquidity position is its ability to meet unexpected cash needs without loss. Given the bank's potential cash needs, its liquidity position is determined mainly by its holdings of short-term marketable assets and unused borrowing capacity.

What is the impact of a well-developed interbank market on the liquidity position of a bank using that market? If an interbank market were to develop overnight, banks with access to it the next morning would find themselves suddenly more liquid and would undertake two kinds of adjustments. First, banks would choose to be more liquid overall, since the cost of being liquid would be reduced, so the sum of their liquid assets and unused borrowing power (appropriately discounted for uncertainty) would rise. Second, the composition of the banks' liquidity position would change as unused borrowing power in the new interbank market was substituted for liquid assets and for other forms of unused borrowing power. If the interbank market developed overnight, banks would begin to dispose of surplus liquid assets the next morning. (We do not, of course, intend this as a description of the way a new market develops. Historically, the more likely scenario is that a rise in the opportunity cost of holding liquid assets will stimulate the development of the market.)

The increase in overall liquidity positions would make individual banks and the banking system less vulnerable to minor shocks such as unanticipated deposit shifts or fluctuations in loan demands. However, the change in the composition of the banks' liquidity position—the dependence on liability management instead of asset management—would expose individual banks and the banking system to the risk that major shocks that affect perceptions of the creditworthiness of individual banks will affect their ability to borrow. (The liquidity position of a bank practicing asset management

can also be adversely affected by a major shock that increases the perceived default risk on assets held for liquidity purposes. But this risk can be minimized if the bank holds assets that are obligations of the government or are guaranteed by the government. Even if assets are private obligations, the bank can protect itself by diversifying its liquid assets.) The extent of the risk depends on how the international interbank market responds to bad news regarding individual banks.

Types of Market Reaction to Bad News

The response by lending banks to adverse information about a bank on which they hold maturing claims may range across a wide spectrum. At one extreme, the lending banks may be willing to roll over maturing claims at the prevailing market rate. At the other, claims may be totally withdrawn, not only from the bank subject to bad news but also from all other banks that are perceived to be even vaguely similar. Intermediate reactions may involve reductions in amounts rolled over, increases in the interest rate charged, and reductions in the maturity of new placements, and these reactions may cover any number of banks that are perceived to be similar.

When a bank that is an active borrower in the interbank market is subject to bad news, the lenders' first step is often to freeze all placement lines to that bank at the level of amounts presently outstanding and stop all roll-overs until more information is obtained. Operationally, this may mean that the decision regarding further placements is switched from the treasury division, where placement decisions within internal guidance lines are made at the discretion of individual traders, to the lending division, where credit decisions are made on the basis of considered evaluations that may take some time. The reevaluation associated with bad news about one bank may be limited to that bank or extended to a larger group. After the credit department conducts a review of the borrowing bank's condition, a decision may be made to reduce placement lines below current amounts outstanding or to shift from longer to shorter maturities.

If placement lines are reduced, the borrowing bank may be forced to pay a premium in the interbank market unless it can reduce its demand for funds commensurately. However, interest-rate increases play a relatively minor role in the adjustment process. Indeed, the bank's willingness to pay a substantial premium may be interpreted as a sign that its condition is desperate and result in a further reduction of placement lines. (For further discussion of the signaling problem in the interbank market, see Guttentag and Herring, 1984a. For discussion of the moral-hazard rationale for credit rationing, see Guttentag and Herring, 1984b.)

Willingness on the part of lending banks to substitute a shortening of

maturities for a reduction in placement lines is much less disruptive to the borrowing bank; if that bank is solvent, it will be able to adjust more efficiently than if lines are reduced or withdrawn altogether. Nevertheless, a shortening of maturities also increases the vulnerability of the borrowing bank to any subsequent shock that reduces market confidence in its condition.

From a social point of view, the desirability of different types of market reactions is not self-evident. It is clear that a well-functioning market would not generate runs on a bank known to be solvent and certainly would not automatically assume that the problems of a bank subject to bad news extended to some larger set of banks. It is more difficult, however, to define an appropriate market response when a bank's solvency is subject to uncertainty.

It is tempting to assert that in such cases the appropriate market response should be measured and gradual—perhaps maturity shortenings or modest rate increases rather than precipitate reductions in credit lines. Yet a bank that does not have large net liabilities coming due in any one period could weather even a precipitate termination of lines if given enough time to demonstrate its solvency, and thus restore its lines before it is forced to sell illiquid assets. Alternatively, it may be able to obtain temporary assistance from a lender of last resort. Thus the appropriateness of the response will depend on how banks manage their liquidity positions and the terms on which lender-of-last-resort assistance is available. Since regulators cannot control market reactions to bad news about a particular bank, they should make sure that the liquidity-management policies of individual banks are consistent with a realistic appraisal of market reactions and the availability of lender-of-last-resort assistance.

Determinants of Market Response

The reactions of lending banks to bad news about a bank or group of banks depend, of course, on the magnitude of the shock and also on the general financial environment. Runs on banks directly affected by shocks, especially spillovers to other banks, are less likely when overall capital positions are strong, interest rates are stable, and confidence in bank supervisory authorities and lender-of-last-resort arrangements is high. This generalization applies to the markets for all bank liabilities. The determinants of market response on which we focus here are those structural features of the international interbank market that may distinguish it from other markets.

One such determinant is the extent to which borrowing and lending banks have other relationships that would be disrupted by the termination of lending. The more a lending bank has to lose by terminating a long-term

relationship, the more inclined it will be initially to give the borrowing bank the benefit of any doubt and to invest in the information required for a more considered judgment later.

For this reason, credit lines to small banks may be terminated less abruptly in the event of bad news than credit lines to larger banks. Although large borrowing banks with good reputations are likely to have access to the interbank market on the basis of name alone, small banks (or large ones with tarnished reputations) may be able to borrow only through relationships maintained by holding non-interest-bearing deposits with lending banks. Hence, banks lending to a smaller bank must expect to lose non-interest-bearing deposits when they cut the borrowing bank's line.

The amount and quality of information available about individual banks affects market response to bad news in various ways. Unambiguously relevant information will increase the lenders' confidence in their judgments regarding the solvency of borrowing banks affected by bad news and also cause convergence in such judgments among different creditors. It thus reduces the likelihood of runs on solvent banks, which is higher desirable, and increases the likelihood of runs on insolvent banks, which has ambiguous social consequences. (An insolvent bank that is allowed to continue operating may inflict unnecessary costs on lenders or insurers by engaging in extremely risky and perhaps even fraudulent ventures of a "go-for-broke" nature. Yet precipitate closure may cause loss of the bank's going-concern value, which might otherwise be salvaged through merger or some similar disposition.)

Information is not always unambiguously relevant, however; it may be subject to different interpretations. If divergent inferences regarding solvency are drawn by different creditors from a particular piece of information, the possibilities of a run are increased. In the market for equities, those who make correct judgments regarding the relevance of new information profit at the expense of those who make erroneous judgments. In deposit markets, those who draw pessimistic inferences, rightly or wrongly, may force their views on those who draw optimistic inferences, and thus validate their pessimistic inferences. The reason is that, aside from the possible disruption of relationships described above, the cost of which may be negligible, there is no penalty imposed on lenders who deny credit to a solvent bank. Other lenders who have confidence in the solvency of a bank may be forced to join the run in self-protection, especially in the absence of an effective lender of last resort, because the bank may fail as a result of illiquidity. The heart of the bank-liquidity problem is that many lenders lack an incentive to give a bank the benefit of the doubt when it is subject to bad news.

The best assurance that new information will be correctly interpreted is

a policy of systematic disclosure. It provides benchmarks for judging normal variations in each bank's condition, as well as accurate measures of overall condition against which the impact of shocks may be assessed (Guttentag and Herring, 1986). Information released *ad hoc* under pressure cannot be put in context and may also suffer from credibility problems because its release is necessarily self-serving. (Systematic disclosure also has the merit of allowing creditor banks to monitor the exposure of borrowing banks to various hazards, and if such monitoring constrains exposure, borrowing banks will be less vulnerable to shocks. As noted later, however, monitoring by creditor banks tends to be rather perfunctory, partly because of a tendency to rely on the authorities to protect the creditors of major banks.)

The availability of relevant information is especially valuable in dampening the spillover to other solvent banks of bad news about a specific bank. By increasing the ability of lending banks to distinguish borrowing banks that are potentially affected by a shock from those that are not, it reduces the number of banks whose access to credit may be threatened. Unfortunately, the quality of information regarding many banks active in the international interbank market is very poor. The lack of information regarding banks' exposure to other banks is especially damaging because it is a potential source of spillover affects. It is known that such exposure can become very large. For example, an investigation of the run on Continental Illinois National Bank found that just before the run, on April 30, 1984, 66 banks had exposures to Continental in excess of their capital, and another 113 had exposures between 50 and 100 percent of their capital. (Memorandum to Chairman Isaac of FDIC from Robert V. Sumway, dated June 20, 1984. This memorandum is shown in an appendix to Committee on Banking, Finance and Urban Affairs, 1984.)

Furthermore, widespread linkages in the interbank market make it possible for any bank to be exposed to almost any other bank. International interbank linkages tend to be more complex than domestic linkages (Ellis, 1981, p. 351), largely reflecting the greater importance of information asymmetries. Bank A knows bank B but not bank C; bank B knows bank C but not bank D, and so on. These asymmetries may result from correspondent relations, proximity, cultural and historical ties, or trade relationships.

The main danger is that when one bank becomes insolvent, interbank lenders, knowing that any bank in the system could be indebted to any other bank but not knowing the extent of each bank's exposure, will assume that banks they consider to be weak have exposures to the insolvent bank. The banks perceived to be relatively weak will be especially vulnerable to runs if earlier perceptions of weakness have already led other banks to make placements with them at very short maturities.

As noted above, lending banks confident of the solvency of borrowing

banks will be less inclined to run if they also have confidence in the availability of lender-of-last-resort (LLR) facilities to borrowing banks. When a borrowing bank has access to an effective LLR in the event of a liquidity shock, lending banks need concern themselves only with the solvency of the borrowing bank, not its liquidity.

Cross-border interbank transactions involve considerable uncertainty regarding the availability of LLR facilities to some borrowing banks. Some participating banks are headquartered in countries that have inadequate LLR facilities or none at all. Some banks are located in countries with adequate LLR facilities for domestic-currency needs, but they may not be adequately protected against a shock that affects their ability to borrow in foreign currency.² Even when a parent bank is adequately protected by LLR facilities at home, there may be doubts about the protection available to its separately incorporated foreign offices (see Guttentag and Herring, 1983).

Market Responses to Shocks

One must be cautious in drawing inferences about the reactions of the international interbank market to the various shocks that have occurred in recent years. Information about interbank behavior toward a bank that has suffered a shock is difficult to obtain unless the bank actually fails. Neither borrowing banks that have funding difficulties nor lending banks engaged in cutting lines are likely to make the fact public. Indeed, a bank could be rationed out of the interbank market completely and abruptly yet leave no evidence of the event, as long as it does not fail. By the same token, it is hard to assess a bank failure involving inability to fund in the interbank market without knowing whether the bank was insolvent; this may be clear in some cases but difficult to determine in others until long after the fact, and perhaps not even then.

On June 26, 1974, the failure of a relatively small German bank, the Bankhaus I. D. Herstatt, led to a contagious loss of confidence that adversely affected the liquidity positions of a number of banks active in the international market. Lending banks reacted to the collapse of Herstatt by withdrawing or reducing placement lines to all but the largest banks. The international interbank market transformed the idiosyncratic problems of a

² This category includes banks headquartered in countries with unconvertible currencies, but to an extent it may also include banks headquartered in countries with convertible currencies but with relatively meager foreign-exchange reserves. In the latter case, if the amount of foreign currency is large relative to foreign-exchange reserves, the LLR faces an uncomfortable policy choice that would not have arisen if the troubled bank had issued liabilities in domestic currency exclusively. For further details, see Guttentag and Herring (1983, pp. 12-13).

badly managed minor German bank into a threat to the stability of the system.

It is not difficult to account for the large spillover effects of a relatively minor shock at that time. Since the market was in an early stage of development and many participating banks were newly formed and had just established relationships with the creditor banks, the latter may have felt little constraint in cutting lines. Furthermore, it was not possible then, nor is it now, to determine the exposure of a bank to other individual banks. The lack of such information was especially damaging when Herstatt was closed, because the bank was known to have substantial forward foreign-exchange contracts outstanding. Since the counterparties to these contracts were not known, the market assumed the worst: that the contracts were held by the relatively small banks least able to withstand the loss.

The banks' exposure-management systems were not well developed at that time. Some banks were not even able to determine their interbank-deposit exposure to other banks on a timely basis, much less their total exposure aggregated over all types of interbank transactions. The closing of Herstatt also raised troubling questions about the way in which the authorities would dispose of a failing bank, because the decision seemed to have been taken without regard for international transactions. Herstatt was closed at the end of the German business day—after Deutschemerk payments had been made to Herstatt but before the corresponding dollar payments had been made to Herstatt's counterparties. Finally, the episode raised for the first time questions about the availability of emergency liquidity assistance to some banks active in the international interbank market.

Since that time, interbank relationships outside the international interbank market have grown and deepened. The banks' exposure-management systems have been substantially ungraded. Attempts have been made to improve the supervision of the banks' international activities. And, partly in response to the Herstatt crisis, central bankers from the major industrial countries have attempted to ease anxieties by announcing that "means are available" and "will be used if and when necessary" to provide temporary liquidity assistance to avert a crisis of confidence in the international financial system (quoted from the official communiqué issued in September 1974 at the Bank for International Settlements, as reported in Wallich, 1977, p. 95).

From 1981 to 1983, the international interbank market sustained four major shocks—each arguably of greater potential magnitude than Herstatt—yet disruptions were minimal. The Latin-American debt crisis directly affected the interbank market, because capital controls made it impossible for banks located in the affected countries to repay their interbank deposits. In several instances, interbank placements were frozen at the

level of amounts outstanding when the capital controls were imposed; in most instances, they were rescheduled along with other external debt. To the surprise of some creditor banks, moreover, the branches of banks headquartered in countries having debt-servicing problems were also caught up in those problems. Since banks usually regard interbank placements as a principal component of their liquid assets, the crisis could have had a damaging impact on the liquidity positions of banks having claims on the affected branches. But, apparently, their exposures were of manageable size. In any event, we are not aware that any bank has failed as the result of such problems.

The Latin-American debt crisis also had an indirect effect on the market. Some of the smaller banks that were known to have heavy concentrations of exposure to Latin-American residents were unable to roll over their interbank liabilities. But most of these banks were affiliates of larger, better-diversified, better-capitalized banks, and they were supported by their shareholders, so their liquidity problems did not become contagious. Major banks that were known to have heavy concentrations of exposure to Latin-American residents did not experience a similar withdrawal of credit lines. This may well have been an indication of confidence in official support for such institutions.

The interbank market contracted somewhat after the debt crisis, and some borrowing banks that had access to it before the crisis did not have access afterward (except perhaps for access to individual lending banks with which they maintained relationships). Nevertheless, the absence of any significant contagion or any illiquidity-induced failure stands in marked contrast to the aftermath of the Herstatt affair in 1974.

The second shock, the freezing of interbank deposits placed with the Manila branch of Citibank, was not different in kind from the Latin-American debt crisis. It is noteworthy, nonetheless, because it revealed a confusion shared by many banks and some supervisors regarding the guarantees that a parent bank offers its foreign branches. A branch is automatically guaranteed against credit risk but not against country risk. Indeed, a number of banks did not realize at first that they had been caught in the freeze because they had classified placements with Citibank Manila as a U.S. risk, not a Philippine risk. Although the Latin-American debt crisis made clear that deposits placed with offshore branches are subject to country risk identified with the country in which the bank is headquartered, some interbank participants overlooked the corollary that such deposits are also exposed to country risk identified with the country in which the branch resides.³

³ Reporting practices in the United States may have contributed to the misapprehension. In computing country exposures, the U.S. Country Exposure Lending Survey shifts claims of

Just as the collapse of Herstatt led to an improvement in the monitoring of exposures to individual institutions, the Citibank Manila incident is likely to lead to further refinements in the monitoring of exposures to individual offices, on a country-by-country basis. As a consequence, large banks with foreign branches may lose some of the advantage their superior credit standing has given them in attracting funds in offshore locations. Although this shock, like the Latin-American debt crisis, is likely to make it more difficult for a country to draw on the interbank market when debt-servicing problems seem imminent, it did not significantly disrupt the market.

The Latin-American debt crisis and the Citibank Manila incident helped clarify the nature of country risk in interbank placements. An aspect of credit risk in the interbank market was clarified by a third shock—the collapse of Banco Ambrosiano, the largest private banking group in Italy, and Banco Ambrosiano Holdings (BAH), a Luxemburg corporation that was 68 percent owned by Banco Ambrosiano. In Luxemburg, BAH was classified as a nonbank holding company, not a bank, and its two major investments—Banco Ambrosiano Overseas Ltd. in Nassau and Banco Ambrosiano Andino in Peru—both prominently displayed the bank's name but were situated in lightly regulated jurisdictions. Thus, BAH was cleverly structured to take advantage of its bank affiliation without subjecting itself to bank regulations. It was able to participate in the international interbank market solely on the strength of its name. Even in the years since its collapse, the authorities have not been able to discover what it did with the funds it borrowed.

When the Ambrosiano group collapsed, all of the creditors of Banco Ambrosiano were repaid promptly, but payment of claims on BAH was delayed and only partial. In one sense, this incident highlighted the risk of making interbank placements on a name basis; but, in another, it affirmed the practice. Depositors who made placements with the bank itself were secure. Only those who made placements with the nonbank subsidiary suffered losses, and the Italian authorities were under heavy pressure to help them as well. Spillover effects from the collapse of Ambrosiano were limited mainly to other Italian banks with similar organizational structures. Subsequent revisions in the agreement for sharing supervisory responsibilities among the major industrial countries (the revised *Concordat* issued by the Committee on Banking Regulations and Supervisory Practices—"the Cooke Committee"—in 1983) helped ease anxieties by clarifying the division of supervisory responsibilities in order to eliminate the gaps that permitted BAH to grow.

The fourth shock to the international interbank market was a run on the Continental Illinois National Bank in May 1984. This followed by twenty-

U.S. banks on foreign bank branches to the country in which the head office is located, under the implicit assumption that the head office will guarantee depositors against country risk.

two months a strictly domestic liquidity shock that the bank weathered largely by replacing domestic liabilities with increased borrowing from foreign banks. The interbank market saved Continental in 1982 and deserted it in 1984.

The earlier shock occurred following the failure of the Penn Square Bank, from which Continental had purchased large amounts of participations in energy loans of questionable quality. In the weeks after the collapse of Penn Square on July 6, 1982, Continental experienced a severe funding problem; large amounts of domestically held certificates of deposit and federal funds were withdrawn. To replace these funds, Continental turned to the international interbank market. (Other banks suffering domestic funding problems, such as the First Pennsylvania Bank, had had the same experience, finding that they were able to borrow in the international money market long after domestic sources had dried up.) By replacing domestic CD's, federal funds, and other liabilities with borrowings from foreign banks, Continental avoided massive borrowings from the Federal Reserve. The maturities of the interbank borrowings were evidently quite short, however, and funding costs were higher than before.

In subsequent months, Continental's funding problems gradually stabilized, but the bank remained highly vulnerable to another liquidity shock because of the large volume of short-maturity funding from foreign banks. Furthermore, the bank's loan-portfolio problems turned out to extend beyond the Penn Square-related acquisitions, and the volume of nonperforming loans gradually rose.

On May 8, 1984, a rumor erupted that the bank was facing imminent bankruptcy. Confidence evaporated with alarming speed, and Continental was quickly forced to borrow large amounts from the Federal Reserve. The announcement on May 14 that a consortium of sixteen major U.S. banks had provided Continental with a thirty-day \$4.5 billion line of credit did not stem the tide. On May 17, just nine days after the first rumors, the FDIC, in conjunction with the Federal Reserve Board and the Comptroller of the Currency, took the unprecedented step of explicitly guaranteeing "all depositors and other general creditors of the bank" (joint press release by the Comptroller of the Currency, the FDIC, and the Federal Reserve Board, May 17, 1984). The guarantee was part of a comprehensive program that included a capital infusion of \$2 billion (\$1.5 billion from the FDIC and \$0.5 billion from a group of commercial banks), an increase in the unsecured credit line from other banks to \$5.5 billion (with the number of participating banks rising to twenty-eight), and an assurance that the Federal Reserve was prepared to meet any extraordinary liquidity requirements of the bank during this period. The fact that all these measures were perceived to be necessary indicates the extent of the loss of confidence. (In

principle, the FDIC's guarantee should have made the other elements of the package redundant. The guarantee, however, was contained only in a press release and lacked a number of legal niceties that many lawyers considered important. As a result, the run did not wholly subside with the FDIC's announcement. Indeed, five months after the start of the run the bank was still heavily indebted to the Federal Reserve.)

Why did the international interbank market support Continental in 1982 and desert it in 1984? The difference in response may have been due to the perceived change in Continental's condition. Weak earnings, increases in nonperforming loans, and abrupt changes in senior management all contributed to an erosion of confidence. And Continental's ability to withstand a liquidity shock was greatly diminished by 1984 because of its greater dependence on very short-term liabilities.

But the market may also have been influenced by changes in the general financial climate associated with the Latin-American debt crisis and the increasing number of bank failures. In addition, foreign banks may have had less confidence in 1984 than in 1982 that the U.S. authorities would protect interbank lenders from loss in the event of a bank failure. In the intervening period, the FDIC had unveiled a new approach to dealing with insolvent banks that was intended to increase market discipline by placing uninsured creditors at risk. Between March 16 and May 4, 1984, seven small banks were closed using the new "payout—cash advance" procedure, which imposed losses on uninsured creditors. (For a discussion of this procedure, see Silverberg, 1984.)

Concluding Comment

A wide variety of factors affect the response of the international interbank market to bad news, including structural features of the market itself, external factors that affect the general condition of banks, and the general state of creditor confidence. The actual responses of the market to various shocks over the last decade reveal a mixed picture. Between the Herstatt episode in 1974, which involved a massive disruption, and the run on Continental Illinois ten years later, the international interbank market weathered four major shocks with little evident strain. These "nonevents" are perhaps more difficult to explain than either the disruption associated with Herstatt, which can be attributed to the adolescence of the market combined with policy mistakes by the German authorities, or the run on Continental, which may have reflected that bank's evolving insolvency and a change in the FDIC's policy for dealing with insolvent banks. Our suspicion is that the market stability of the intervening years was based less on careful credit evaluation and monitoring of banks active in the interbank market

than on confidence in implicit guarantees that official institutions would protect interbank creditors from loss. A recent study by the Bank for International Settlements (1983, pp. 33-35) concludes that credit assessment in the interbank market

. . . can be somewhat rudimentary, particularly with respect to the larger banks in the market. It is not uncommon for banks to be willing virtually without question to provide lines to the largest 100 to 300 banks. . . .

Indeed, in general, interbank business tends to be viewed automatically by banks as a relatively good risk, particularly where prime banks are concerned. . . .

Cursory credit evaluations are encouraged by a widespread perception that interbank transactions generally, or at least those involving banks located in major financial centers, entail very low risk because the authorities will not allow any major bank to default on interbank claims. The capital requirements in several important jurisdictions support this view. Belgium, France, Germany, Switzerland, and the United Kingdom require less capital (in varying degrees) to be held against interbank assets than against claims on nonbanks. The perception of low risk is supported also by official rescue efforts in recent years that have prevented losses in connection with interbank deposits held at most failing banks. In recent years, Costa Rica, Chile, and Argentina have all been induced to repay interbank placements when banks within their jurisdictions failed.

While the FDIC's new policy may have caused some wavering of this confidence, which may in turn have contributed to the run on Continental, the subsequent bailout of all the bank's creditors reaffirmed the validity of the market's presumption that lenders to major banks never lose money.

This is troubling, because the actual and potential social costs of market transactions based on this assumption may be substantial. They include ineffective monitoring by the market (and a correspondingly greater burden on the supervisory authorities), more danger of asset wastage from insolvent banks that are allowed to drift too long before being closed, unjustified advantages to large banks, which are judged most likely to receive official support, and the danger that if the authorities ever do allow lending banks to suffer significant losses they may precipitate a major crisis.

References

- Bank for International Settlements, *The International Interbank Market: A Descriptive Study*, BIS Economic Papers No. 8, July 1983.
- Clarke, Stephen V.O., *American Banks in the International Interbank Market*, Monograph 1983-4, New York, New York University, Salomon Brothers Center for the Study of Financial Institutions, Mar. 2, 1984.

- Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, *Continental Illinois National Bank Failure and Its Potential Impact on Correspondent Banks*, Staff Report to the Subcommittee on Financial Institutions, Supervision, Regulation and Insurance, Washington, Oct. 4, 1984.
- Continental Illinois National Bank, *Prospectus*, Aug. 24, 1984.
- Dematte, Claudio, "International Financial Intermediation: Implications for Bankers and Regulators," *Banca Nazionale Del Lavoro*, 136 (March 1981), pp. 91-110.
- Ellis, John G., "Eurobanks and the Interbank Market," *Bank of England Quarterly Bulletin*, 21 (September 1981), pp. 351-364.
- Giddy, Ian H., "Risk and Return in the Eurocurrency Interbank Market," *Greek Economic Review*, 3 (August 1981), pp. 158-186.
- Guttentag, Jack, and Richard Herring, "The Insolvency of Financial Institutions: Assessment and Regulatory Disposition," pp. 99-126 in Paul Wachtel, ed., *Crises in the Economic and Financial Structure*, Lexington, Mass., Lexington Books, 1982.
- , *The Lender-of-Last-Resort Function in an International Context*, Essays in International Finance No. 151, Princeton, N.J., Princeton University, International Finance Section, May 1983.
- , *Strategic Planning by International Banks and Supervisors to Cope with Uncertainty*, Philadelphia, The Wharton Program in International Banking and Finance, May 1984a.
- , "Credit Rationing and Financial Disorder," *Journal of Finance* (December 1984b), pp. 1359-1382.
- , "Disclosure Policy and International Banking," *Journal of Banking and Finance*, 10 (Spring 1986).
- Herring, Richard J., "The Interbank Market," in P. Savona and G. Sutija, eds., *Eurodollars*, New York, Macmillan, 1984.
- Kreicher, Lawrence, "Eurodollar Arbitrage," *Federal Reserve Bank of New York Quarterly Review*, 7 (Summer, 1982), pp. 10-22.
- McKinnon, Ronald I., *The Eurocurrency Market*, Essays in International Finance No. 125, Princeton, N.J., Princeton University, International Finance Section, December 1977.
- Niehans, Jurg, and John Hewson, "The Eurodollar Market and Monetary Theory," *Journal of Money, Credit & Banking*, 8 (February 1976), pp. 1-27.
- SEC Staff, "Citicorp Report," Washington, Securities and Exchange Commission, September 1982, mimeographed.
- Silverberg, Stanley C., "Restricting Brokered Deposits," *Housing Finance Review* (January 1984).
- Wallich, Henry C., "Central Banks as Regulators and Lenders of Last Resort in an International Context: A View from the United States," *Key Issues in International Banking*, Federal Reserve Bank of Boston Conference Series, No. 18, October 1977.

U.S. MONETARY POLICY IN AN INTERDEPENDENT WORLD

Henry C. Wallich

In 1941, when I first met Arthur Bloomfield at the Federal Reserve Bank of New York, U.S. exports and imports of goods and services were, respectively, 6 percent and 4 percent of GNP. As of 1984 these numbers have reached 10 and 12 percent. Obvious distortions in base year and final year notwithstanding, the data give a sense of the degree to which interdependence of the American economy with the rest of the world has increased.

Growth of Interdependence

Very few major economies can have gone through so substantial a process of "opening" as the United States. For the United Kingdom, for instance, both exports and imports (including services) comprised 20 to 27 percent of GNP in the early to mid 1930s. In 1984, these proportions were little changed, both amounting to 29 percent. By contrast, for the United States, exports and imports both were about 4 percent of GNP in the early 1930s; by 1984, as noted, they had risen to 10 and 12 percent respectively.

In a broader although shorter perspective, the ratios of exports and imports to gross domestic product for member countries of the Organization for Economic Cooperation and Development (OECD), excluding the United States, rose on average by one-half from 1960 to 1982. For the United States, the export ratio rose 80 percent and the import ratio more than doubled.

Growing dependence of the United States on the rest of the world has been matched only in part by greater dependence of the rest of the world on the United States. From 1948 to 1982, U.S. exports declined as a proportion of GDP of non-U.S. OECD countries, going from 8.1 to 6.3 percent. Imports by the United States rose in relation to their GDP from 4.7 to 6.6 percent. In other words, the United States as a supplier has become less important to the rest of the world, but as a customer it has gained weight.

Ratios of this type, of course, can give only very approximate notions of the changing shape of things. Multicountry models, reflecting the response of national economies to changes in foreign income, prices, and exchange rates and to capital flows, might modify some of the overall impressions. At the micro level, moreover, particular sectors and commodities might display a much greater dependence on the United States.

Ambivalent Responses to Interdependence

"Interdependence" is a term that generally has positive connotations. More trade, more coordination, more brotherhood of nations is what the term routinely evokes. This happy sentiment does not always stand up to closer scrutiny. There is, no doubt, much more international awareness on the part of the average voter. News coverage has broadened, travel has increased enormously. But the best single measurement of how the voter feels about interdependence can perhaps be derived from comparing the willingness to initiate the Marshall Plan in 1948, which was to absorb 1 percent of GNP over four years, with the difficulties of getting approval for the relatively less burdensome IMF quota increase in 1983.

For the policymaker, growing interdependence has been in many ways a nuisance, if not a positive threat. Nations have tried to shield themselves in some degree by going to a regime of floating exchange rates. The United States, as well as the rest of the world, is in danger now of taking another backward step, dismantling liberal trade and moving to high protectionism.

Foreign countries, not having experienced so much change in their degree of interdependence, have generally responded more moderately. Small countries by their nature have tended to be closely tied to their larger neighbors and have had to accept that dependence. Overall, the rapid growth of world trade following World War II, at a rate more than one-third faster than the growth of GDP itself, testifies to the great benefits from growing interdependence.

Asymmetries in Interdependence

Because countries differ so widely in their response to interdependence, one useful way of giving structure to the concept is to focus precisely on these differences. National behavior since the advent of floating exchange rates has tended to reflect the degree of openness. Small countries have usually attached their currencies to those of larger neighbors. Large and small countries have coalesced in groupings indicative of their relative preference for external over internal stability. Large countries that have not been willing to submit to this discipline have thereby had an opportunity to express their relative preference.

An alternative structuring of interdependence is the polar constellation in which the United States, as the reserve-currency country, assumes responsibility for price stability while other countries are responsible for exchange-rate stability. By its nature, of course, this structure is almost bound to be politically unpopular, at least abroad. Nevertheless, one could say that a structure of this kind functioned after a fashion until the late 1960s,

when inflation became unacceptably high in the United States. Foreign countries responded to this U.S. default by seeking to maintain a set of exchange rates that no longer fitted the situation. The system may have merit in a world where the United States does indeed perform the price-stabilizing role, but the credibility of any set of fixed exchange rates has suffered severely from the experience of more than a decade of floating. Humpty Dumpty is not likely to be put together again in the foreseeable future.

Faster Progress of Financial Interdependence

Meanwhile, interdependence has made progress in financial markets at a rate far eclipsing that in the real sector. This development has been a function partly of financial deregulation, partly of preferences of investors and other asset holders, and partly of the exchange-rate regime.

The degree of regulation has differed widely among countries. Where exchange controls have been totally or largely absent, as in the United States, Germany, Switzerland, and more recently England, there has been no limit to gross capital flows. Net flows, of course, are limited in the short term by current-account balances, and they were relatively small for most of the postwar period, as most countries sought to avoid extreme current-account imbalances. The experience of the United States after 1982 has indicated, however, that under certain conditions net flows can become very large very quickly.

Recent U.S. experience also has documented that, while net capital inflows are limited to the size of the current-account deficit, gross flows can sometimes dominate the balance of payments and the exchange rate. When *ex ante* gross inflows minus the current account deficit equal *ex ante* gross outflows, there is no reason, from an exchange-market-balance point of view, why exchange rates should move. If *ex ante* gross inflows minus the current-account deficit substantially exceed *ex ante* gross outflows, the exchange rate must move in order to equate *ex post* gross inflows minus the deficit to *ex post* gross outflows. There is no limit to *ex ante* gross flows within a very wide range, if holders of foreign currencies find dollar holdings attractive at existing exchange- and interest-rate levels. They may be much larger than the current-account deficit and indeed larger than total trade. It is in this sense that *ex ante* gross capital flows may dominate the balance of payments and the exchange rate, even though they must always be reduced *ex post* to equal the current-account deficit plus *ex post* outflows. An even fuller statement of the process at work would have to include contingent claims and obligations, including forward, futures, and swap operations, if adequate data were available. The resulting exchange-

rate movement and consequent swing in the current account can in turn be very large, as has been observed. This property of exchange markets under floating rates, which prior to recent U.S. experience does not seem to have been fully recognized, may not bode well for the future of foreign trade or for the future of the floating system itself.

Investor preferences seem to have followed only quite gradually the opportunities provided by freedom of capital movements. Anecdotal evidence suggests that the international diversification of portfolios has moved slowly. This is confirmed by the modest size of foreigners' net securities operations in the American, British, German, and Japanese markets. The international diversification of liquid-asset holdings seems to have been more substantial. Taken together, diversification of cash balances to meet the needs of multinational firms, short-term speculative operations encouraged by interest-rate differentials and expected exchange-rate movements, and lending and borrowing by banks in connection with the development of the Euromarkets seem greatly to have exceeded long-term investment. Gross flows have reached a magnitude that has made exchange-market intervention by central banks progressively less promising.

The observed integration of capital markets reflects, in the first instance, international movements of funds from place to place rather than movements from currency to currency. Holders of dollars all over the world, especially, can move them at will, national exchange controls permitting. Such movements can finance the U.S. balance of payments without directly generating any exchange-rate effect. Indirectly, exchange-rate effects may result from a movement, say, of dollars from the Euromarket to the United States if the flow raises dollar interest rates in the Euromarket, leading holders of other currencies to shift into dollars. Integration among capital markets in different currencies is high also in a technical sense, but it is restrained by the volatility of exchange rates. Under the old system of fixed rates, small interest-rate differentials and other market factors could produce massive flows. To forestall excessive flows, the driving forces had to be constrained by interest-rate actions of central banks; otherwise, their exchange reserves would have been quickly depleted in the absence of exchange control. Under a regime of floating rates, flows among currencies have involved exchange-rate risks more immediate than those typically existing under fixed rates. Anticipations of exchange-rate movements have made possible the persistence of sizable interest-rate differentials among currencies.

The integration of financial markets in terms of their interest-rate levels has therefore remained far from complete. Widespread complaints have been heard, to be sure, about excessive interdependence of interest rates and particularly about the way in which U.S. interest rates are said to have

pulled up rates in other markets. It needs to be remembered, however, that interest rates which follow U.S. rates do so largely at the bidding of their domestic monetary authorities. These authorities, concerned about a depreciating exchange rate, are apt to raise interest rates to match American increases. Without such policies, to be sure, local interest rates would still tend to rise in some degree as local investors sold securities and withdrew bank deposits in order to buy dollar assets. But the interest-rate differential, left to market forces, would probably remain much wider.

The high degree of financial-market interdependence, particularly in today's conditions of financial stress, must be evaluated against the experience of the 1930s. In that earlier period, interdependence diminished in all dimensions as the world depression took hold. But interdependence in finance diminished even more rapidly than in the real sector. Financial restrictions in the form of exchange controls generally preceded trade restrictions. In many cases they became almost total. Fixed exchange rates were preserved in many instances, but to the detriment of the freedom and volume of transactions. A legacy of the view that capital controls are more legitimate than trade controls is observable in the rules of the International Monetary Fund, which in some degree sanction capital controls while outlawing current-account restrictions. In recent years, even under conditions of stress, capital movements have enjoyed a high degree of freedom, current-account transactions sometimes less so, while exchange-rate stability has received the lowest priority. Something may have been learned from history.

Factors Conditioning Monetary Policy

In discussing U.S. monetary policy in an interdependent world, three factors call for particularly close examination. One is the effect of interdependence itself, especially its increase over the years. A second is the all-pervasive influence of inflation. The third is the predominance of floating-exchange-rate regimes.

Advantages and disadvantages of size. It was noted earlier that, while the United States has shrunk relative to the world economy, its international sector has grown. Therefore, the impact on the rest of the world of the American economy as a customer and U.S. sensitivity to what happens in the rest of the world have both been enhanced. They must increasingly be taken into account in formulating monetary (as well as most other) policy.

The United States is probably the only country that can exert a sufficient impact on the world economy as a whole to acquire a genuine self-interest in modulating that impact because of the feedback upon the U.S. economy.

To be sure, that feedback is not large, given an import/GNP ratio of no more than 12 percent. But if the initial impact is sufficiently strong, the feedback still will be significant. The United States differs in this from other countries. The policies of other countries do not generate significant feedback from abroad because their impact is small, reflecting the size of their economies. Except as political relations and the like dictate a different attitude, they have little self-interest in avoiding a negative impact on the rest of the world. Yet they are much more sensitive to the rest of the world.

The importance of this feedback having risen in recent years, one might assume that the United States would be increasingly concerned with its impact on the world. Its monetary and fiscal policies, along with all others, could be expected to be increasingly sensitive to foreign impact and feedback. It would be difficult to show, however, that this logic has been reflected in U.S. policies. By and large, the United States was more concerned about the state of the world when the feedback was smaller but it was an unchallenged leader and felt strong responsibilities. Leadership has been diluted; responsibility, or so it seems to me, has tended to yield to expediency. Of course, it would be easy to find exceptions to this generalization. The conclusion here stated derives from overall impression rather than enumeration. It is worth noting, however, that if this has been the trend, it has been going against our own self-interest.

For monetary policy, the issue of the U.S. international interest, as contrasted with its domestic concerns, is rarely posed in specific form. Central-bank cooperation has been the rule on a variety of occasions, usually on issues not rising to the level of general monetary policy. In extreme cases, such as worldwide concern about the dollar in late 1978 and again in 1979, international considerations have achieved priority. The Federal Open Market Committee's (FOMC) policy record invariably contains at least one paragraph relating to the exchange-rate situation. The directive issued to the open-market desk refers to "fostering . . . conditions that will . . . contribute to an improved pattern of international transactions" as one of the objectives of the FOMC. Every FOMC member must decide how much weight to give to the interest-rate problems of developing countries, how much to the slow recovery in Europe, and how much to domestic concerns over the state of the housing sector, the thrift industry, and the farm sector.

Perhaps the best-known recent proposal for coordination of international monetary policy is that of McKinnon (1984, p. 61). His proposal seeks to reorient U.S. (and also German and Japanese) monetary policy toward international considerations:

To mitigate the cycles of worldwide inflation and deflation characteristic of the past dozen years, the proper coordination of monetary policies has two comple-

mentary aspects. First, in response to continual and unpredictable shifts in international portfolio preferences, nations can adjust their domestic money supplies to stabilize exchange rates. . . . Orienting national money growth toward the exchange rate can be a powerful instrument for securing exchange stability and better balancing the supply of the national money to the direct and indirect demand for it. . . . Second, cyclical fluctuations in 'world' money—the sum of transactions balances in hard currency countries—must also be avoided. . . . The Federal Reserve System needs to make American monetary policy more symmetrical with respect to other important hard currency countries such as Germany and Japan. Instead of being *synchronized* with money growth in the rest of the world . . . U.S. M1 should vary in an *offsetting* fashion through mutual agreement. Growth in world money would then be stabilized.

This has been interpreted as an ambitious proposal for the central banks of the United States, Germany, and Japan to target jointly on a world money supply rather than target individually on the domestic money supply. In its more moderate version, the proposal involves targeting on the exchange rate instead of targeting on the domestic money supply. In evaluating this proposal, it is hard to see how a central bank could accept a monetary rule that might compel it to take actions clearly at odds with its domestic situation, even though possibly appropriate from some international point of view. Targeting on the exchange rate seems to subject the domestic money supply to something approximating a gold-standard rule. With both exchange-rate targeting and the gold standard, the supply of money is increased or reduced in accordance with the state of the balance of payments. Both proposals seem to push responsiveness to interdependence to an extreme.

A more moderate application of these principles seems acceptable, as proposed by Frenkel (1983, pp. 65-109), among others. It would use the exchange rate as an indicator of the degree of ease or tightness of monetary policy, to be weighed along with other indicators, as the Federal Reserve is already doing to some extent. Certainly a monetary policy leading to pronounced weakness or strength of the exchange rate could usefully be corrected in this light. It goes without saying that there are countries for which exchange-rate stability may take precedence over domestic considerations as a general rule. For these, the modified McKinnon prescription seems particularly suitable.

Inflation. In the United States and abroad, inflation has put a dominant imprint on the objectives and techniques of monetary policy that tends to limit flexibility severely so long as the threat remains. Most major countries have money-supply targets of one sort or another—announced, unannounced, projected, for one definition of money or another, and possibly for some credit aggregate. This reflects the general view that a slowing of money growth is reliably related over time to a reduction of inflation. Set-

ting an interest-rate target that will achieve the same result is much more difficult. The impact on inflation of a given level of interest rates, nominal or real, before tax or after, is far less predictable and likely to be more controversial. Each country, of course, will have its own money-supply target, reflecting the current level of inflation and the trend of velocity.

In this setting, monetary policy tends to become inflexible. Indeed, that inflexibility is widely regarded as one of the virtues of a money-supply target—to make monetary policy predictable. Any change in monetary targets, moreover, is read by the market as a statement of intentions with respect to inflation. It is difficult for a central bank to admit publicly that it will promote or at least tolerate a higher rate of inflation. All forms of responsiveness to the international environment tend therefore to be inhibited, except insofar as monetary policy can be responsive through the money-supply target.

Firm adherence to a money-supply target implies, to a degree, rejection of the claims of interdependence. Failure to respond to these claims involves a cost, the sacrifice of benefits of coordination. It can be justified only by a single-minded determination to bring inflation under control. Every monetary-policy move that would compromise that objective, even for the sake of a more constructive response to interdependence, can then be rejected with some degree of justification. The rationale for giving such a priority to fighting inflation is not that stable prices are a more important ultimate objective than low unemployment or rapid growth. Few utility functions are likely to exhibit such a characteristic. Rather, the priority for price stability rests on the experience that, in the medium run, its loss also implies the loss of the other two objectives. Price stability is a precondition, except in rare circumstances, for sustainable fast growth and low unemployment. A money-supply target accepted as consistent with the attainment of price stability, while far from infallible, seems to have shown itself to be the most promising means of achieving that objective, for both economic and political reasons.

Floating exchange rates. A floating exchange rate is the policy-maker's first line of defense against the suffocating embrace of interdependence. It permits pursuit of a fixed money-supply target. Within certain limits, it also permits more general independence of monetary policy. Both advantages, however, come at considerable cost.

Before the advent of floating a little over ten years ago, it might have been hypothesized that two countries with different money-supply targets (and the same velocity behavior) would find their exchange rate diverging proportionately to the difference between their targets. We now know that markets do not always work that way. The reason for the disappointment is not that the quantity theory does not—however approximately—hold at

home. It does. Prices move approximately in line with money growth. Exchange rates deviate from money-growth differentials because the purchasing-power-parity theory does not hold, at least in the short run and for moderate price movements. Consequently, if the return to price stability is sought by means of a stable and gradually declining rate of money growth, very substantial exchange-rate fluctuations may have to be accepted as one of the costs.

At the time when floating began, it was widely believed that a floating rate would provide a shield for independent monetary policies. Each country could have the rate of monetary expansion (and presumably of inflation) that it chose. This, it was thought, represented one of the advantages of floating. It avoided the drawbacks of a fixed rate, where every move of monetary policy brought a move also of reserves into or out of the central bank, setting narrow limits to policy leeway. While a floating exchange rate does provide scope for a fixed money-growth policy, it has not widened the limits to policy leeway as much as might have been hypothesized. Experience has shown that monetary-policy moves under floating rates provoke quicker responses than under fixed rates. In the case of an easing of policy, these responses tend to be adverse.

Under fixed rates, a shift to a policy of expansion is viable so long as there are enough exchange reserves to meet the reserve drain. Only when the reserve limits are reached does the danger of undesirable exchange-rate depreciation come close. The availability of adequate reserves or credit will reassure the market that this contingency is far off and need not be guarded against immediately by moving capital out of the country.

Under floating rates, the ultimate consequences of a monetary-policy action may be telescoped into the present by expectations. An expansionary action creates an expectation of future capital outflows. This leads to immediate outflows that will depreciate the exchange rate rapidly if the central bank does not intervene. If it does, moreover, its reserves may be exhausted more quickly than in the fixed-rate case, because the market does not see the prospect of even temporary rate stability, on which it can typically count under a fixed rate. This accelerated response to a change in monetary policy is not inevitable. But it seems to have occurred with sufficient frequency to put in substantial doubt the usefulness of floating rates as a means of defending a variable monetary policy that does not subordinate all other goals to a dependable reduction in inflation. The obstacle is the immediate response of the exchange rate, with resultant damage to inflation control.

It needs to be noted that, thanks to international interdependence, a stable rate of money growth does not ensure a stable expansion of domestic credit. When banks in the United States lend to their foreign branches and

fund more at home, the U.S. money supply goes up while domestic credit remains unchanged. The domestic banks now have as one of their assets a claim on affiliated foreign branches. By the same token, when banks in the United States bring back funds previously loaned to their branches abroad or other borrowers and lend the money to domestic borrowers, domestic credit expands, but the money supply does not. Instead of an enlarged money supply, the banks now show on their asset side a reduced claim on their foreign branches. The expansion of credit and aggregate demand that previously occurred abroad now occurs at home. Worldwide consolidation of bank balance sheets would capture this effect, but only a world money-supply concept, not necessarily indicative of monetary conditions in particular countries, would correctly reflect the monetary counterpart of these international shifts in credit expansion.

Interdependence and Fiscal Policy

The preceding sections have dealt with the functioning of monetary policy under conditions of growing interdependence, variable inflation, and floating exchange rates. Since 1982, however, U.S. monetary policy has operated in an international environment strongly influenced by one further and historically entirely unusual condition: the continuing large budget deficit of the United States. I shall briefly survey this phenomenon because it has been so dominant, even though in no sense characteristic of an interdependent environment.

The sequence of cause and effect, on which there is a fair amount of mainstream agreement, runs as follows:

1. The budget deficit increases aggregate demand, thereby increasing imports, which tends to drive down the dollar, and it raises interest rates, which tends to drive up the dollar. Part of the expansion must be attributed also to tax reforms that have improved business profitability and raised spending.

2. No general statement can be made as to whether the deteriorating current account or the improving capital account will prevail in their effect on the exchange rate. Empirically we know that the capital account won out beginning in 1982.¹

3. The high dollar has caused a large current-account deficit, with U.S. exports rather flat and imports rising rapidly. Contributing factors have

¹ In his doctoral dissertation and in subsequent articles, Arthur Bloomfield examined the behavior of the U.S. balance of payments for most of the period from 1919 to 1939 and found that expansions cyclically driven by domestic business investment have tended to strengthen the balance of payments. A similar finding, covering the period since 1950, was made by Wallich and Friedrich (1982).

been the more advanced cyclical position of the United States and the weakness in imports of debt-troubled developing countries. The rise in the dollar has also helped to reduce inflation in the United States, at the expense of stimulating inflation in the rest of the world. But the current-account deficit will have a cumulative effect in increasing the world's holdings of dollar assets, so there is a presumption that, at a constant interest-rate differential, the dollar will weaken eventually if expectations that the budget deficit will be reduced are disappointed. If and when this happens, the inflation gains would have to be "paid back."

4. The large current-account deficit has implied an inflow of foreign capital of equivalent magnitude. This has helped to keep U.S. interest rates down and facilitated the financing of the strong expansion of business-investment spending (if the private sector can be regarded as the marginal borrower). A decline in the dollar would reduce the capital inflow and very likely raise U.S. interest rates.

5. Through its strong expansion and large trade deficit, the United States has acted as a locomotive for the rest of the world in the weak cyclical situation of the early 1980s. High U.S. interest rates and high prices of dollar-based (not merely dollar-quoted) commodities have had adverse effects abroad. On balance, however, the impact of U.S. policies on foreign economies seems to have improved economic conditions abroad.

6. The large budget deficit has not prevented monetary policy from targeting on money supply and from seeking to bring down the rate of money growth, and therefore of inflation, over time. In the absence of so large a budget deficit, interest rates would probably have been lower. It cannot be asserted with certainty, however, that they would have been low enough to compensate by increased private investment for the reduction in aggregate demand resulting from the lowered deficit. At lower rates of interest, in any event, the demand for money would have been larger. This factor, together with a possible need for a greater reduction in interest rates than would have resulted automatically from a reduced deficit, might have given rise to a need for a one-time increase in the money supply, without permanent change in the decelerating money-supply targets. An increase of this kind took place in the second half of 1982 and the first half of 1983, as the money supply adjusted to the sharp decline in interest rates from their very high levels earlier in 1982. With the deficit continuing without major change, these issues, of course, remain moot.

Concluding Remarks

In the course of all these dramatic developments, U.S. monetary policy has pursued, by and large successfully, a policy of money-supply targeting that

has contributed very substantially to bringing down the rate of consumer price inflation, which in 1980 reached a peak of 13.5 percent. Most real-sector changes, other than strictly cyclical ones—in aggregate demand, interest rates, the exchange rate, and growth—fundamentally have been the result of an unprecedented fiscal policy, with monetary policy shaping the impact. Even though the period has been short, these events tend to confirm the old dictum that monetary policy cannot lastingly affect the real sector, only the level of prices. They also confirm, however, that what happens to the level of prices is very important.

References

- Frenkel, Jacob A., "International Liquidity and Monetary Control," in George M. von Furstenberg, ed., *International Money and Credit: The Policy Roles*, Washington, International Monetary Fund, 1983.
- McKinnon, Ronald I., *An International Standard for Monetary Stabilization*, Policy Analyses in International Economics No. 8, Washington, Institute for International Economics, March 1984.
- Wallich, Henry, and Klaus Friedrich, "Cyclical Patterns in the U.S. Balance of Payments," *Economies et Sociétés*, 16 (April-May 1982), pp. 481-502.

THE EFFECTS OF AUTONOMOUS CAPITAL INFLOWS: AN ELABORATION OF BLOOMFIELD'S ANALYSIS

Dale W. Henderson

Introduction

Until the late 1950s, capital movements received much less attention than goods movements in macroeconomic analysis of open economies. Arthur Bloomfield played a significant part in redressing the balance. In his study of capital inflows into the United States in the 1930s and his study of capital movements under the pre-1914 gold standard, Bloomfield convincingly demonstrates the importance of integrating capital movements into both theoretical and empirical macroeconomic analysis.

Bloomfield relies heavily on the balance-of-payments equation, the condition that the sum of the current-account surplus and the capital-account surplus must equal the increase in official reserves. This equation has long been a standard tool of analysis in open-economy macroeconomics. However, in the late 1960s and 1970s prevailing formulations were attacked for not being consistent with portfolio-balance theory. Over the last decade, several analysts have shown how to derive acceptable formulations.¹

This paper is an elaboration of the analysis of autonomous capital inflows contained in the concluding chapter of Bloomfield (1950). The analytical framework is a macroeconomic model of an open economy that includes a well-specified balance-of-payments equation. It is similar to the one used in Henderson (1983).

The Model

Consider the following period model of an open economy with a fixed exchange rate:

$$0 = C - S, \quad (1)$$

$$0 = H^b - \tilde{H}, \quad (2)$$

$$0 = B^b + B^n - \tilde{B}, \quad (3)$$

I wish to thank James Foster for helpful comments. The views expressed here are the author's and do not necessarily represent the views of the Federal Reserve Board or any other members of its staff.

¹ See, for example, Buiters and Eaton (1981), Deardorff (1981), Henderson (1983), Miller (1981), Stevens (1976), and Tobin and de Macedo (1981).

$$0 \equiv - (L^n - L^n_{-1}) - (B^n - B^n_{-1}) - (Q^n - Q^n_{-1}) + S, \quad (4)$$

$$0 \equiv (L^n - L^n_{-1}) + (L^{*n} - L^{*n}_{-1}) - (B^b - B^b_{-1}) - (H^b - \tilde{H}_{-1}), \quad (5)$$

$$0 \equiv (\tilde{H} - \tilde{H}_{-1}) + (\tilde{B} - \tilde{B}_{-1}) - (R - R_{-1}), \quad (6)$$

$$0 = C + (L^{*n} - L^{*n}_{-1}) - (Q^n - Q^n_{-1}) - (R - R_{-1}). \quad (7)$$

This model is a descendent of the Mundell (1963)-Fleming (1962) model. Equation (1) is the equilibrium condition for the home-goods market; saving (S) must equal the current-account surplus (C).² Equation (2) is the equilibrium condition for the home high-powered-money market; home banks' high-powered-money demand (H^b) must equal the available supply (\tilde{H}). Equation (3) is the equilibrium condition for the home (currency) bond market; the sum of the nominal demands for home bonds by home banks (B^b) and home nonbanks (B^n) must equal the available supply (\tilde{B}). For simplicity it is assumed that foreign banks and nonbanks do not hold home bonds and that home banks and nonbanks do not hold foreign bonds.

Equation (4) is the wealth-accumulation identity for home nonbanks; home nonbanks' saving must equal the sum of their acquisitions of home (currency) bank deposits ($L^n - L^n_{-1}$) and home securities ($B^n - B^n_{-1}$) and the home-currency value of their acquisition of foreign (currency) bank deposits ($Q^n - Q^n_{-1}$). The assumption that home nonbanks hold foreign deposits but not foreign bonds is somewhat unusual. It was chosen over the more usual one that home nonbanks hold foreign bonds but not foreign deposits in an attempt to take account of Bloomfield's finding that a significant proportion of capital flows in the late 1930s represented changes in holdings of bank deposits. Equation (5) is the balance-sheet-change identity for home banks; acquisitions of home bank deposits by home nonbanks and by foreign nonbanks ($L^{*n} - L^{*n}_{-1}$) must equal the sum of home banks' acquisitions of home bonds and home high-powered money. Equation (6) is the balance-sheet-change identity for the home authorities; the sum of the increases in supplies of high-powered money and home bonds must equal the home-currency value of the increase in the authorities' holdings of gold ($R - R_{-1}$).

² It is assumed that the prices of goods are predetermined in the currency of the producing country. Units are chosen so that these predetermined prices, the fixed home-currency price of foreign currency and the fixed home-currency price of gold, are equal to one. Thus, for example, there is no need to distinguish between magnitudes measured in the goods of a country and magnitudes measured in its currency. It is also assumed that the government deficit is zero and that investment, the capital stock, and therefore equity claims on the capital stock are zero. The model could be modified to allow for a nonzero government deficit by adding the deficit to the right-hand side of equation (1) and subtracting it from the right-hand side of equation (6). The more extensive modifications required to allow for investment, the capital stock, and equity claims are spelled out in Tobin and de Macedo (1981).

Summing the equilibrium conditions (1), (2), and (3) and the identities (4), (5), and (6) yields equation (7), which is the condition for equilibrium in the balance of payments; the sum of the current-account surplus and the capital-account surplus must equal gold purchases by the authorities.³ The capital-account surplus equals foreign nonbanks' acquisitions of home bank deposits minus the home-currency value of the home nonbanks' acquisitions of foreign bank deposits. Since the right-hand side of (7) is identically equal to the sum of the right-hand sides of (1), (2), and (3), only three of these four equilibrium conditions are independent. The equilibrium conditions for the goods market, the home high-powered-money market, and the balance of payments are used in the analysis below.

Now the behavioral relations are described. Home saving is given by

$$S = S(Y + Z, i), \quad 0 < S_1 < 1, S_2 > 0, \quad (8)$$

where Y is home output, Z is a transfer from abroad, and i is the nominal interest rate on home securities.⁴

The current-account surplus is given by

$$C = X - M(Y + Z - S) + Z, \quad 0 < M' < 1, \quad (9)$$

where X represents exports, which are taken to be exogenous and constant, and M represents imports. It is assumed that no interest is paid on either home or foreign bank deposits.⁵ Since bank deposits are the only internationally traded assets, no interest receipts or payments are included in the current-account surplus.⁶

Home nonbanks' desired asset holdings are given by

$$L^n = Yl(i), \quad l' < 0, \quad (10)$$

$$B^n = [1 - k(i)][A_{-1} + S] - Yl(i), \quad k' < 0, \quad (11)$$

$$Q^n = k(i)[A_{-1} + S], \quad (12)$$

³ Versions of this result are derived in all of the references in footnote 1.

⁴ For simplicity it is assumed that the nominal interest rate on home bonds is the expected real interest rate. That is, it is assumed that the expected rate of depreciation of the home currency and the expected rates of inflation for the home-currency price of home goods and the foreign-currency price of foreign goods are all equal to zero. It is also assumed that interest receipts do not add to disposable income because they are taxed away.

⁵ Only minor changes in the analysis would be required if it were assumed that bank deposits denominated in each currency had a positive interest rate that was fixed at a level below the interest rate on bonds denominated in that currency. For a related point, see footnote 6. More significant changes in the analysis would be required if it were assumed that bank deposits had variable interest rates.

⁶ If the model were modified to allow for trade in interest-bearing assets, it would be possible to exclude interest receipts and payments from the analysis by assuming that the authorities imposed the system of taxes and transfers spelled out by Allen and Kenen (1980).

where A_{-1} is home nonbanks' beginning-of-period nominal wealth. It is assumed that home residents hold a positive fraction of their wealth in foreign deposits ($0 < k < 1$).⁷

Home banks accept all the deposits that home and foreign nonbanks want to hold. Their desired holdings of high-powered money and home bonds are given by

$$H^b = H^b(i, L^n, L^{*n}), \quad H^b_1 < 0, 0 < H^b_2 < 1, 0 < H^b_3 < 1, \quad (13)$$

$$B^b = B^b(i, L^n, L^{*n}), \quad B^b_1 < 0, 0 < B^b_2 < 1, 0 < B^b_3 < 1. \quad (14)$$

Foreign nonbank deposits are taken to be exogenous.⁸ Home and foreign nonbank deposits are entered separately to allow for the possibility that home banks might react differently to changes in the two categories of deposits. Bloomfield suggests that banks may have regarded foreign nonbank deposits as more volatile than home nonbank deposits during the late 1930s and therefore may have allocated a larger fraction of an increase in foreign nonbank deposits to an increase in holdings of high-powered money ($H^b_3 > H^b_2$).

The conditions that excess demand in the goods market [$Y(\cdot)$], excess demand in the high-powered-money market [$H(\cdot)$], and the balance of payments [$BOP(\cdot)$] equal zero can be rewritten as⁹

$$0 = Y(Y, i; Z), \quad Y_Y < 0, Y_i < 0, Y_Z > 0, \quad (15)$$

$$0 = H(Y, i; \tilde{H}, L^{*n}), \quad H_Y > 0, H_i < 0, H_{\tilde{H}} = -1, HL^* = H^b_3, \quad (16)$$

$$0 = BOP(Y, i, R; Z, L^{*n}), \quad BOP_Y < 0, BOP_i > 0, BOP_R = -1, \\ BOP_Z > 0, BOPL^* = 1. \quad (17)$$

These three equations determine the three endogenous variables Y , i , and R given the exogenous variables. When the authorities use sterilized intervention to fix the exchange rate, the exogenous variables are \tilde{H} , Z , and L^{*n} . However, when they use nonsterilized intervention, \tilde{H} becomes an endogenous variable; changes in R lead to changes in \tilde{H} of the same size and sign.

In Figure 1, the Y schedule is derived using equation (15); the H schedule is derived using (16), and the BOP schedule is derived using (17). The

⁷ If k were greater than 1 or negative, some results might be reversed. Restricting k to be positive seems natural under the assumption that foreign deposits are the only foreign-currency assets held by home nonbanks. However, this assumption is only a simplification. In addition to i , k also depends on the expected rate of depreciation of the home currency, which is assumed to be equal to zero.

⁸ More precisely, it is assumed that the determinants of L^{*n} , which include the foreign interest rate and the expected rate of depreciation of the home currency, are all predetermined and exogenous variables.

⁹ Explicit expressions for the partial derivatives of the equilibrium conditions are contained in the Appendix.

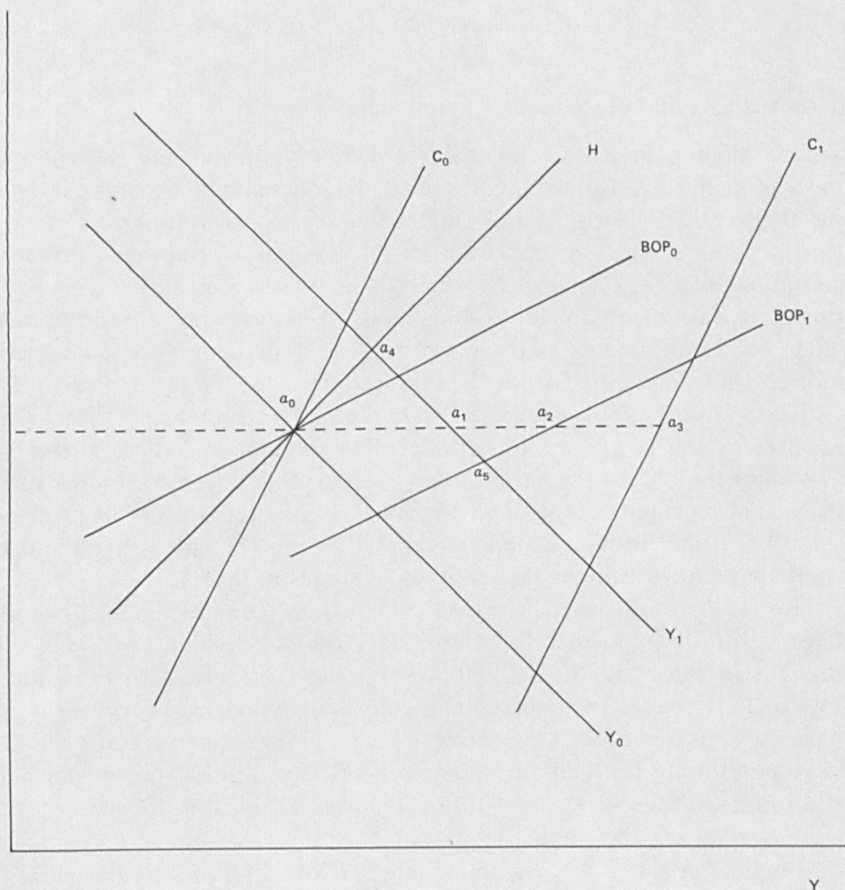


FIGURE 1

H schedule may be steeper than the *BOP* schedule, as in Figure 1, or flatter. Increases in the authorities' holdings of gold shift the *BOP* schedule to the left. If the authorities increase their reserves, the sum of the current- and capital-account surpluses must be higher. Therefore, the interest rate must be higher for each level of income. Increases in reserves that are not sterilized also shift the *H* schedule, but to the right.

Another schedule, the *C* schedule in Figure 1, is useful in the analysis that follows. This schedule represents the pairs of i and Y that are consistent with keeping the current-account surplus equal to a particular value (\bar{C}). It may be steeper than both the *H* and *BOP* schedules, as in Figure 1, or flatter than either or both of them. It is derived using the following equation:

$$C(Y, i; Z) - \tilde{C} = 0, \quad C_Y < 0, C_i > 0, C_Z > 0. \quad (18)$$

The Analysis of Autonomous Capital Inflows

Before Bloomfield wrote, the analysis of transfers of income was the main focus of many, if not most, studies of capital movements. Bloomfield begins his theoretical investigation of capital flows with a careful restatement of the income-expenditure approach to the analysis of transfers. Following accepted practice, he views the analysis of transfers as an exercise in the theory of balance-of-payments adjustment. A transfer has a positive direct effect on the balance of payments of the receiving country and a negative indirect effect resulting from the induced increase in the income of the receiving country. The central question is whether the positive direct effect is offset by the negative indirect effect. As Bloomfield indicates, the conclusion of the income-expenditure approach is that a transfer improves the balance of payments of the receiving country. Bloomfield and his predecessors derive this result in models where the interest rate is fixed and the capital-account surplus is insensitive to changes in income.

The same result can be derived in the more general model presented here. A transfer of income from foreigners to home residents ($dZ > 0$) shifts the Y schedule, the BOP schedule, and the C schedule to the right in Figure 1. It creates an excess demand for home goods and surpluses in the balance of payments and the current account. Increases in Y are required to re-equilibrate the market for home goods and the balance of payments and to return the current account to its initial value. But the sizes of these increases are not the same.

The shift in the BOP schedule from BOP_0 to BOP_1 is smaller than the shift in the C schedule from C_0 to C_1 ($a_0a_2 < a_0a_3$). An increase in Z improves the current account by more than it improves the balance of payments because it raises home residents' saving, and therefore their demand for foreign deposits. For the same reason, an increase in income deteriorates the current account by less than it deteriorates the balance of payments. Of course, if the capital-account surplus were insensitive to income, as assumed by Bloomfield and his predecessors, the shift in the BOP schedule would be the same as the shift in the C schedule.

The shift in the Y schedule from Y_0 to Y_1 is smaller than the shift in the BOP schedule ($a_0a_1 < a_0a_2$). An increase in Z increases the excess demand for goods by less than it improves the balance of payments because home residents choose to hold only a fraction of the increase in their saving in foreign deposits. For the same reason, an increase in Y reduces the excess demand for goods by more than it deteriorates the balance of payments.

Consider first the case in which the monetary authorities fix the interest

rate. In this case, the new equilibrium is at point a_1 . Income increases but by less than enough to keep the balance of payments in equilibrium and the current account equal to its initial value. The home currency tends to appreciate, so the home authorities intervene to support the foreign currency and convert the proceeds into gold. The *BOP* schedule shifts to the left from BOP_1 until it passes through point a_1 . A transfer of income to the home country still leads to an increase in home reserves even though the capital account deteriorates when income increases. Of course, the increase in home reserves is less than it would be if the capital account were insensitive to changes in income.

The home country gains reserves under other plausible assumptions about the behavior of the monetary authorities. If the authorities use sterilized intervention, holding constant the supply of high-powered money instead of the interest rate, the equilibrium is at a_4 . Sterilized intervention shifts the *BOP* schedule up from BOP_1 until it passes through that point. Income rises by less than it would if the authorities held the interest rate constant, and the interest rate rises. Therefore, the authorities gain more reserves than they would if they pegged the interest rate.

If the authorities use nonsterilized intervention, allowing changes in both the stock of high-powered money and the interest rate, the new equilibrium lies on the Y_1 schedule somewhere between a_4 and a_5 . Nonsterilized intervention shifts the *BOP* schedule and the *H* schedule toward one another until they intersect on the Y_1 schedule. The increase in income may be smaller or larger than if the authorities held the interest rate constant, and the interest rate may rise or fall. It follows that the authorities may gain more or fewer reserves than they would if they pegged the interest rate.

In Bloomfield's view, the capital inflows into the United States in the late 1930s were the result not of transfers of income but of shifts in asset preferences. Accordingly, he sets aside the analysis of transfers and proceeds to develop an analysis of shifts in asset preferences. A capital inflow generated by a shift in preferences in favor of home-currency assets has a positive direct effect on the home balance of payments. Maintaining the perspective of the theory of balance-of-payments adjustment, Bloomfield asks whether this positive direct effect is offset or reinforced by the indirect effects of the capital inflow.

The first type of shift considered by Bloomfield is a shift out of foreign-currency assets into home bonds. In the model of this paper, the effects of such a shift can be analyzed by considering a shift out of foreign-currency assets into home deposits ($dL^{*n} > 0$) under the assumption that home banks increase their demand for home bonds by the full amount of any increase in their deposit liabilities to foreigners ($H^b_3 = 0$). As shown in Figure 2,

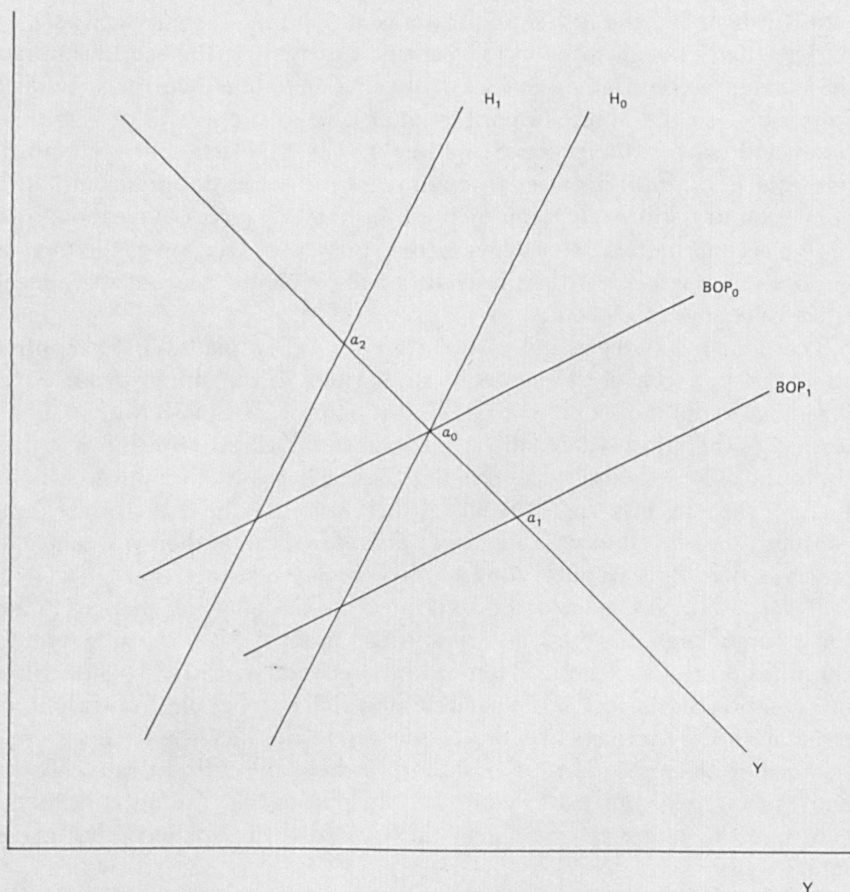


FIGURE 2

this kind of shift in asset preferences moves the *BOP* schedule down. With sterilized intervention, the new equilibrium is back at a_0 . There is no change in the interest rate or income. The home authorities definitely accumulate reserves because the capital inflow has no indirect effects. With nonsterilized intervention, the equilibrium lies on the *Y* schedule somewhere between a_0 and a_1 . The interest rate is lower, and income is higher. The accumulation of reserves is smaller because the negative indirect effects of the capital inflow partially offset the positive direct effect.

Bloomfield observes that a significant part of the capital inflow into the United States in the late 1930s took the form of increases in foreigners' holdings of dollar deposits at U.S. banks. He reasons that any increase in deposit liabilities would lead to some increase in banks' demand for high-

powered money. He concludes that capital inflows that take this form are less likely to generate changes in income and the interest rate that work to re-equilibrate the balance of payments.

Bloomfield's conclusion can be confirmed using the model of this paper. As shown in Figure 2, an increase in foreigners' demand for home bank deposits ($dL^{*n} > 0$) that causes banks to increase their demand for high-powered money ($H^b_3 > 0$) not only shifts the *BOP* schedule down but also shifts the *H* schedule up. With sterilized intervention, the new equilibrium is at point a_2 rather than at point a_0 . The interest rate rises and income falls. The gold inflow is larger because the indirect effects reinforce the direct effect.

With nonsterilized intervention, the new equilibrium lies on the *Y* schedule between a_0 and a_1 whether or not banks increase their demand for high-powered money. However, when banks increase their demand for high-powered money, the new equilibrium is closer to a_0 . Since the increase in foreigners' demand for home deposits shifts the *H* schedule up, the *BOP* schedule and the *H* schedule must move farther if they are to intersect on the *Y* schedule. The interest-rate decline and income increase are smaller. The gold inflow is larger because the negative indirect effects are smaller.

It might appear that the new equilibrium can lie above a_0 . However, it cannot. With nonsterilized intervention, the market for home goods and the omitted market for home bonds can be used by themselves to determine the interest rate and income, since neither market is affected by changes in gold holdings. An increase in foreign demand for home deposits with $0 < H^b_3 < 1$ generates an excess demand for home bonds. In order to re-equilibrate the bond market and maintain equilibrium in the goods market, the interest rate must fall and income must rise.

Conclusion

Bloomfield's analysis of the effects of autonomous capital inflows stands the test of time. The results of the analysis of transfers by Bloomfield and his predecessors hold up quite well in a model that is somewhat more general than the one they employed. The receiving country still experiences a gold inflow and an increase in output. Modeling autonomous capital inflows as shifts in asset preferences is every bit as useful in analyzing dollar exchange rates in the 1980s as it was in analyzing the U.S. balance of payments in the 1930s.

What has changed since Bloomfield wrote is the perspective of the analyst. It is now more common to view the analysis of shifts in asset preferences as an exercise in stabilization theory rather than balance-of-payments-

adjustment theory. The difference in perspective affects the interpretation of results. For example, from the perspective of stabilization theory, sterilized intervention can be helpful; although a shift in asset preferences toward home bonds leads to a larger reserve gain with sterilized intervention, the interest rate and income are unaffected.

Bloomfield's finding that increases in deposit liabilities to foreigners led to relatively large increases in U.S. banks' holdings of high-powered money in the late 1930s may well have received less attention than it deserves. Banking data from the late 1930s has frequently been used in tests of the liquidity-trap hypothesis. Bloomfield's finding suggests that it may be important to control for the composition of bank liabilities in conducting such tests.

It is a cliché that the usefulness of treating certain changes as "autonomous" depends on the purpose of the analysis. Arthur Bloomfield thought it useful to view shifts into dollar assets in the late 1930s as autonomous in order to make progress in understanding their effects. At the same time, he put forward some suggestive hypotheses about the underlying causes of those shifts. His approach is in the best tradition of the profession.

Appendix

This appendix contains algebraic derivations of some of the results presented in the text. The total differentials of equations (15), (16), and (17) can be arranged in matrix form as

$$\begin{bmatrix} Y_Y & Y_i & 0 \\ H_Y & H_i & -(1 - \beta) \\ BOP_Y & BOP_i & -1 \end{bmatrix} \begin{bmatrix} dY \\ di \\ dR \end{bmatrix} = \begin{bmatrix} -Y_Z & 0 \\ 0 & -H^b_3 \\ -BOP_Z & -1 \end{bmatrix} \begin{bmatrix} dZ \\ dL^{*n} \end{bmatrix},$$

where $0 < \beta < 1$ represents the degree of sterilization, so that $d\bar{H} = (1 - \beta)dR$.

Explicit expressions for the partial derivatives of the excess demand functions are given by

$$\begin{aligned} Y_Y &= -S_1 - M'(1 - S_1) < 0, & H_Y &= H^b_2 l > 0, \\ Y_i &= -S_2(1 - M') < 0, & H_i &= H^b_1 + H^b_2 Y_l' < 0, \\ Y_Z &= (1 - M')(1 - S_1) > 0, \\ BOP_Y &= -M'(1 - S_1) - kS_1 < 0, \\ BOP_i &= M'S_2 - k'(A_{-1} + S) - kS_2 > 0, \\ BOP_Z &= 1 - M'(1 - S_1) - kS_1 > 0. \end{aligned}$$

It is assumed that $0 < S_1, M', H^b_2, H^b_3 < 1; H^b_1, l', k' < 0$; and $S_2, l > 0$. It is also assumed that home nonbanks hold a positive fraction of their wealth in foreign deposits ($0 < k < 1$) and that an increase in the interest rate improves the balance of payments ($BOP_i > 0$) because its positive effects, reduced spending on imports and substitution away from foreign deposits, dominate its negative effect, more demand for foreign deposits because of increased wealth. If either of these assumptions is relaxed, some of the comparative-static results reported below may be reversed.

The determinant of the system is given by

$$\Delta = -Y_Y H_i + H_Y Y_i + (1 - \beta)(Y_Y BOP_i - BOP_Y Y_i) < 0.$$

The effects of an increase in Z are given by

$$dY/dZ = (1/\Delta)[Y_Z H_i + (1 - \beta)(BOP_Z Y_i - Y_Z BOP_i)] > 0,$$

$$di/dZ = (1/\Delta)[-Y_Z H_Y + (1 - \beta)(Y_Z BOP_Y - BOP_Z Y_Y)] \geq 0,$$

$$dR/dZ = (1/\Delta)[-Y_Z(H_Y BOP_i - BOP_Y H_i) - BOP_Z(Y_Y H_i - Y_i H_Y)] > 0,$$

where dR/dZ is definitely positive because

$$Y_Z BOP_Y - BOP_Z Y_Y = (1 - k)S_1 > 0,$$

since $0 < k < 1$.

The effects of an increase in L^*n are given by

$$dY/dL^*n = (1/\Delta)[-H^b_3 Y_i + (1 - \beta)Y_i] \geq 0,$$

$$di/dL^*n = (1/\Delta)[H^b_3 Y_Y - (1 - \beta)Y_Y] \geq 0,$$

$$dR/dL^*n = (1/\Delta)[H^b_3(Y_Y BOP_i - BOP_Y Y_i) - Y_Y H_i + H_Y Y_i] > 0.$$

References

- Allen, Polly R., and Peter B. Kenen, *Asset Markets, Exchange Rates, and Economic Integration*, Cambridge, England, Cambridge University Press, 1980.
- Bloomfield, Arthur I., *Capital Imports and the American Balance of Payments 1934-1939*, Chicago, University of Chicago Press, 1950.
- Buiter, Willem H., and Jonathan Eaton, "Keynesian Balance of Payments Models: Comment," *American Economic Review*, 71 (September 1981), pp. 784-795.
- Deardorff, Alan V., "Keynesian Balance of Payments Models: Comment," *American Economic Review*, 71 (September 1981), pp. 774-777.
- Fleming, J. Marcus, "Domestic Financial Policies under Fixed and under Flexible Exchange Rates," *IMF Staff Papers*, 9 (November 1962), pp. 369-380.
- Henderson, Dale W., "Comment" in Douglas Purvis, ed., *The Canadian Balance of Payments: Perspectives and Policy Issues*, Montreal, Institute for Public Policy, 1983.

- Miller, Norman C., "Keynesian Balance of Payments Models: Comment," *American Economic Review*, 71 (September 1981), pp. 778-783.
- Mundell, Robert A., "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science*, 29 (November 1963), pp. 475-485.
- Stevens, Guy V. G., "Balance of Payment Equations and Exchange Rate Determination," International Finance Discussion Paper No. 95, Washington, D.C., Board of Governors of the Federal Reserve System, 1976.
- Tobin, James, and Jorge Braga de Macedo, "The Short-Run Macroeconomics of Floating Exchange Rates: An Exposition," in John S. Chipman and Peter B. Kenen, eds., *Flexible Exchange Rates and the Balance of Payments: Essays in Memory of Egon Sohmen*, Amsterdam, North-Holland, 1981.

INFLATION, EXCHANGE RATES, AND DOMESTIC POLICY: A RESTATEMENT

Randall Hinshaw

As an eminent scholar, educator, and adviser to central banks and governments, Arthur Bloomfield has been concerned throughout his career with exchange-rate theory and policy. His early views on these matters are set forth in Bloomfield (1947). He has consistently maintained—as have I—that, with appropriate domestic policies, devaluation (or exchange-rate depreciation) is an effective method of coping with a deficit in the balance of payments.¹

Recently, this position has been challenged by Mundell. At the 1980 Hamburg monetary conference, he declared that advocates of a lower exchange rate as a means of removing a trade deficit “must show that real resources are shifted. And that is what I dispute. Barring changes in employment, there is no adjustment associated with a change in the exchange rate.” He made one exception. An altered exchange rate might “induce changes in international debtor-creditor relationships; these might work in one direction or the other. But in the absence of such changes, no one in this room—and no one, I think, in the literature—has ever developed an explicit account of the way in which a change in the exchange rate, meaning a monetary change, can achieve real adjustment” (quoted in Hinshaw, ed., 1983, p. 141).

Words could hardly be clearer, and on this issue the views of Mundell, whose contributions to international economic theory have been of the first order, must be taken very seriously; in no way are we dealing with a straw man. Without challenging his bold claim that the matter has never been explicitly demonstrated in the literature, and without suggesting that lowering the exchange rate is necessarily the *wisest* way of dealing with a payments deficit, I shall endeavor to show that, with appropriate national economic policies, it is an effective method. I have tried to do this before, but on certain basic points Mundell could rightly charge that I was not sufficiently rigorous.² I shall try here to clarify the analysis—at the risk, no doubt, of being painfully “explicit.”

¹ The analysis in this paper applies to any decline in the nominal exchange rate, whether the result of devaluation (moving from a pegged rate to a lower pegged rate) or of exchange depreciation in response to market forces. The issue of fixed vs. flexible exchange rates is outside the scope of the paper.

² My principal statements on the economics of devaluation are listed in the references at the end of this essay. My intellectual debts to others (including Mundell!) are acknowledged in Hinshaw (1974 and 1976). I should add the names of Max Corden, Harry Johnson, and (for

Disequilibrium in a World of Costless Transportation

The "switching" of production from nontraded goods³ to "traded" or "international" goods (specifically, exportables and import-competing products) has long been advanced as one of the ways in which a lower exchange rate can reduce a trade deficit. But under conditions of full employment, switching is not enough; there must be a decline in real absorption, as Corden (1977) has pointed out.

This raises an interesting question. Is switching (and thus a shift of resources) needed to produce the necessary cut in real absorption? To answer that question, we need to postulate a world in which there are no nontraded goods—in other words, a world where transport costs are zero and there are no barriers to trade of any kind. In such a world, all goods would be international goods—either exportables or importables. For a given country, comparative advantage would determine which products were exportable and which were importable. A fraction, perhaps a large fraction, of the exportable goods would be consumed at home, with the rest exported; and a fraction, perhaps a large fraction, of the importables would be produced and consumed at home, with the rest of domestic consumption provided by imports.

The relationships are most easily visualized in the case of a very small country accounting for an insignificant fraction of world demand and supply. To make the analysis as simple as possible, let us assume that there are no "differentiated" products—that all goods are completely standardized and that the consumer is ignorant of, and indifferent to, where they are produced. To deal with Mundell's case, we shall assume that the country enjoys full employment and that real output cannot be increased. And to refrain from taking advantage of Mundell's one concession, we shall assume a world without international capital movements. As an initial situation, let us assume that both the government budget and the balance of payments are in balance. Finally, let us assume that exchange rates are pegged—either because the world is on a metallic standard or because central banks intervene when necessary in the foreign-exchange market. In either case, since international borrowing is ruled out, a payments deficit must be financed by an outflow of "owned" monetary reserves.

Without international capital movements, exports must equal imports in equilibrium. But the equilibrium can be easily disturbed. Consider, for example, a case that I have used before (Hinshaw 1958, 1976). Suppose

an illuminating letter) Ronald Jones. With regard to the present paper, I would like to thank Harold McClure and Thomas Willett for helpful suggestions. Of course, I am exclusively to blame for any errors or other shortcomings.

³ Earlier—and more accurately—called "domestic," "home market," or "home" goods.

that in this very small country—initially in equilibrium with a balanced budget and a balanced payments position—a new government comes into power and increases social-security benefits, not by an increase in taxes but by monetary expansion. The government literally prints new money to finance the increase in transfer payments. The result, of course, is an increase in disposable income without an increase in real output, since real output cannot rise under our assumptions. The recipients of the new money will increase their expenditure on commodities that are either importables or exportables. Thus imports will rise, exports will fall, and the balance of payments will move into deficit.

The increase in expenditure does not cause a perceptible rise in the country's (or the world's) price level, because the country is assumed to account for an insignificant fraction of world demand. Indeed, there will be *no* rise in the country's price level if other countries take the very modest fiscal or monetary measures needed to offset the inflationary effect of the increase in their monetary reserves. Instead, the disequilibrium takes the form of a payments deficit, which is a trade deficit in this case. If we assume that the increase in disposable income is completely spent on current output, the trade deficit will equal the budget deficit.

It should be noted that the domestic money supply does not expand at all. New money is created each period, but the payments deficit, which has to be financed by an outflow of reserves, involves an equivalent leakage from the domestic money supply. Thus the money supply remains constant. In terms of the "monetary" approach to the balance of payments, the new money is excessive in relation to the price level, and, in effect, "leaks" abroad in exchange for foreign output. (Strictly speaking, the redundant currency leaks into the country's central bank, which has to use monetary reserves to buy the leaking currency in order to keep the exchange rate from falling. It will here be assumed that the domestic currency thus acquired by the central bank is withdrawn from circulation.)

Disinflation vs. a Lower Exchange Rate

This state of affairs can continue, of course, only until the country runs out of monetary reserves. Long before that point is reached, the country is likely to take action to reduce the payments deficit. The basic problem is that the level of disposable income is too high in relation to the price level. To put the matter another way, real absorption per period is greater than real output per period. The remedy is to reduce real absorption (but not real output!), either by reducing disposable income—which can be done without lowering the price level—or by raising the price level without permitting a corresponding increase in nominal absorption.

If nominal wage rates have not risen—and there would be no reason for such an increase on either productivity or cost-of-living grounds—the obvious and most sensible solution would be to reduce disposable income by removing the budget deficit. Under our assumptions, this would automatically remove the trade deficit; it would lower the level of real absorption to the unchanged level of real output at an unchanged price level.

Is a lower exchange rate a viable alternative? To answer this question, let us consider what would happen if the central bank were to stop the outflow of monetary reserves by ceasing to support the country's currency in the exchange market. The exchange rate would then fall, because the newly created money, instead of flowing into the central bank, would bid up the price of foreign currencies. Moreover, the trade deficit would immediately disappear, because it was no longer being financed. To put the matter another way, the level of real absorption would immediately fall to the level of real output.

But would this external balance be purchased at the price of a continuously falling exchange rate—and therefore a continuously rising price level—or would the exchange rate approach some lower limit? This is a tricky question that cannot be answered without introducing additional assumptions. The first thing to note is that, under our assumptions of costless transportation, free trade, and standardized products, commodity arbitrage would be perfect (if we additionally assume instant communication). This means that the following variables would all rise at a uniform rate: the price of foreign currencies, the country's overall price level, its import price level, its export price level, and its nominal income.

Two other important variables would also rise, although not necessarily at the same rate: government revenue and, in all likelihood, government expenditure. If government revenue and government expenditure were both to grow at the same rate, the nominal budget deficit would increase, resulting in further monetary expansion, continued price inflation, and a continuously falling exchange rate under which there would be no floor. If, however, the government were to put a lid on its expenditure—or at least were to prevent expenditure from growing as rapidly as revenue—the budget deficit would gradually diminish, and a point would eventually be reached at which the budget was back in balance. During the period when the deficit was declining, the need to print new money would correspondingly decline, and it would completely disappear when budget balance was achieved. From then on, the country would be in equilibrium, both domestically and internationally, with a balanced budget, a fixed money supply, a stable (though higher) price level, a balanced payments position, and—in the absence of changes in foreign demand or supply—a stable exchange rate.

Conceivably, this new equilibrium might be reached without any change in tax policy and without any reduction in real government expenditure. If, for example, because of "bracket creep," government revenue were to grow at a higher rate than nominal income (which would be rising at the same rate as the overall price level), and if nominal government expenditure were prevented from rising more rapidly than the price level, a point would eventually be reached at which the budget was in balance. This is an interesting case, not only because there has been no change in tax policy and no cut in real government expenditure, but because adjustment has taken place without any change in relative prices, without any change in the terms of trade, without any increase in real output, and without any shift in productive resources.

And that brings us back to Mundell. In the statement quoted, he declared that advocates of a change in the exchange rate to restore international balance "must show that real resources are shifted." But in the case just considered, adjustment is achieved without any need for such a shift. Instead, there is a reduction in real absorption brought about by the return to budget balance. In our original illustration, adjustment was achieved, without a change in the exchange rate and without a change in the price level, simply by balancing the budget before monetary reserves were exhausted. In our latest case, a lower exchange rate—accompanied by the disappearance of the budget deficit because of bracket creep—is part of the implicit adjustment "package," but the essential ingredient is the return to a balanced budget. Here one can agree with Mundell that, under present assumptions, the "real" situation in the two cases is essentially the same. But there *is* a real change: the reduction in real absorption, caused in both cases by the restoration of budget balance.

Implications of Nontraded Goods

The picture changes significantly if we introduce "nontradables" into the analysis. Without relaxing any of our other assumptions, let us assume that the shipping of commodities involves costs that vary with the distance traveled. In this setting, each commodity has an "import point" and an "export point"; for the typical nontraded good (defined as a commodity for which the demand and supply are currently exclusively domestic), the import and export points are widely separated. But inflation can transform an "exportable" into a nontraded good, or a nontraded good into an "importable"; as Haberler (1933) and Graham (1934) pointed out long ago, the boundaries between these categories are by no means fixed.⁴

⁴ My views on these matters are developed at greater length in Hinshaw (1975).

In equilibrium, the relative prices of traded and nontraded goods are such that the country's exports equal its imports. But, as in our earlier model, this equilibrium can be easily disturbed by inflation. Starting, as before, with a pegged exchange rate and an initial position of full employment, budget balance, and external balance, let us reconsider the effect of an increase in government spending that is financed simply by printing money. Domestic expenditure will increase on traded goods, the prices of which remain fixed, and will also increase on nontraded goods, the prices of which are free to rise to their respective import points. The result is a change in relative prices that induces a shift in domestic consumption toward traded goods, a shift in domestic production toward nontraded goods, and a rise in nominal wage rates to attract workers to the nontradable sector.

As before, the increased domestic expenditure—unaccompanied by an increase in real output—means that exports fall, imports rise, and a trade deficit emerges that is financed by an outflow of monetary reserves. But in contrast to our first case, the country's money supply, price level, and nominal income all rise. The money supply rises, because part of the increased disposable income is spent on nontraded goods. Only a fraction of the newly created money leaks abroad, the remainder adding to the domestic money supply, leading to a rising price level of nontraded goods, and therefore to a rising overall price level (the price level of traded goods rises only to the extent that nontraded goods reach their import points).

The rate at which the money supply and the overall price level rise will depend, *inter alia*, on the relative importance of traded and nontraded goods in domestic absorption. If nontraded goods account for only a small fraction of domestic absorption, the inflationary policy here assumed will have a much greater effect on the trade balance than on the price level (properly weighted to reflect the relative importance of tradables and nontradables). If, on the other hand, nontraded goods account for most of domestic absorption, the inflation will be directed mainly at the price level rather than the trade balance. In either case, the country's money supply, overall price level, and nominal income—all rising at the same rate—will continue to rise until the trade deficit equals the budget deficit.

But the budget deficit cannot be regarded as a constant. With the rise in the price level, government expenditure can be expected to rise, and with the rise in nominal income, government revenue will also increase. Even if both variables rise at the same rate, the nominal budget deficit will increase, and if the rising deficit is financed by printing money, the inflationary process will continue indefinitely, with a continuously rising money supply, a continuously rising price level, and a continuously rising trade deficit.

With a pegged exchange rate, however, this situation cannot go on forever, because the country will eventually run out of monetary reserves. The first obvious question is whether equilibrium can be restored merely by discontinuing the inflationary policy—that is, by ceasing to print new money. In principle, the answer is yes, if—and it is a *big* if—prices and nominal wage rates are completely flexible. In this case, the outflow of reserves will decline and then cease, because with no further money creation the reserve outflow will cause the domestic money supply to contract, leading to a fall in the price level of nontraded goods and a fall in nominal income (including nominal wages). The process will continue until the money supply, nominal income, and the price level of nontraded goods—and therefore the relative price levels of nontraded and traded goods—have returned to their equilibrium positions. Thus if prices and wage rates are completely flexible, the inflationary process is entirely reversible; the *status quo ante* can be restored without a decline in real output or employment.

In the modern world, however, nominal wage rates, while upwardly flexible, are notoriously inflexible in the opposite direction. If we assume that commodity prices are downwardly flexible but that nominal wage rates are not, the monetary contraction and resulting fall in the price level of nontraded goods would squeeze profits and would force marginal firms out of business. But any decline in real output would damage the attempt to achieve international balance. What is needed is a decline in real absorption relative to real output; the business failures and attendant unemployment could be depended upon to reduce real absorption, but the reduction in real output would make international adjustment not only more painful but more difficult to achieve.

Much would depend, of course, on the degree of disequilibrium. If the budget deficit and the trade deficit were small in relation to real output, the amount of deflation required to restore equilibrium would also be small, entailing only modest difficulties. But, as just shown, the disequilibrium could easily grow to serious dimensions, with a continuously rising price level, a growing budget deficit, and a trade deficit reflecting ever-increasing real absorption in excess of the unchanged level of real output.

Exchange-Rate Adjustment Reconsidered

In this latter context, will a lower exchange rate restore domestic and international equilibrium—assuming, of course, that the inflationary policy is discontinued? To answer this question, let us assume that the central bank ceases to support the exchange rate at the same time that monetary expansion is halted. The trade deficit immediately disappears, because it is no longer financed. Thus the level of real absorption immediately falls to the

level of real output. But at the exchange rate prevailing up to this point, the situation is not in equilibrium. Two features are out of line. First, the money supply, which can no longer leak abroad in exchange for foreign output, is excessive in relation to the existing price level. To paraphrase Johnson (1977a, 1977b), the nominal cash balances of individuals and firms are excessive at the old exchange rate. Second, the relative prices of traded and nontraded goods are not in equilibrium, inducing excessive domestic consumption of tradables and excessive domestic production of nontradables.

But the exchange rate is now free to move. Individuals and firms, in their efforts to get rid of redundant cash balances, can bid up the price of foreign currencies, thereby raising the country's price level—in particular, the price level of traded goods. The lower exchange rate for the country's currency accomplishes two objectives: by raising the price level of traded goods (with little, if any, effect on the price level of nontraded goods), it restores the equilibrium relationship between the two price levels, and by raising the overall price level (without any change in the now fixed money supply), it eliminates redundant nominal cash balances. Assuming a prompt transfer of productive resources in response to increased profits in the traded-goods sector, these changes restore an equilibrium pattern of production and consumption; the domestic production of tradables is increased, and the domestic consumption of such goods—imports and exportables—is reduced. Domestic and international equilibrium is restored at the cost of a higher overall price level (higher than the previous inflated price level), but not at the cost of unemployment—provided, of course, that the higher price level does not lead workers to demand wage increases that are inconsistent with full employment.

How far the exchange rate would have to fall will depend on the degree to which the price level of nontraded goods has risen as a result of the inflationary policy here assumed. If, for example, this price level has risen by 25 percent, and if the price level of traded goods has remained unchanged, the price of foreign currencies would have to rise by 25 percent to restore the equilibrium relationship between the two price levels; in other words, the country's exchange rate would have to fall by 20 percent. The resulting rise in the overall price level of course would be less than the 25 percent increase in the price level of traded goods, the degree of rise depending on the relative importance of tradables and nontradables in domestic real expenditure. If domestic expenditure were mainly on nontradables—the price level of which would be little affected by the lower exchange rate—the rise in the overall price level in this situation would be less than 12.5 percent; if domestic expenditure were mainly on tradables,

the rise in the overall price level would be somewhere between 12.5 and 25 percent.

In any case, the percentage rise in nominal national income would be the same as the rise in the overall price level. But the rise in *disposable* income would be less than this, because disposable income would no longer include the money formerly created each period to finance the now discontinued increase in transfer payments. Assuming, as has been tacitly assumed throughout this analysis, that disposable income is always completely spent on current output, the rise in nominal absorption would therefore be less than the rise in the overall price level. Real output would not fall, because commodity arbitrage—assumed in this paper to be perfect—would assure that any output not consumed domestically would be exported.

But the effectiveness of the lower exchange rate does not depend on the existence of transfer payments. The story would be essentially the same if the increase in government spending—financed by printing money—had been on current output (domestic or foreign) rather than on increased social-security benefits. For example, if, at the time of unpegging the exchange rate, the government were to substitute an income-tax increase for the printing of new money, the rise in nominal disposable income caused by the lower exchange rate would—as in the case just considered—be less than the rise in the overall price level. In either case, if we assume that the *real* demand and supply functions for traded and nontraded goods are reversible—that they trace exactly the same respective paths in either direction—it follows that real exports and real imports will return to their equilibrium levels in response to the return to equilibrium of the relative price levels of tradables and nontradables, *and* to the reduction in real absorption assured by the altered relationship between nominal disposable income and the overall price level. The Procrustean reduction in real absorption achieved by the central bank's refusal to continue financing the trade deficit—accomplished exclusively by a reduction in real imports—will be superseded by a situation in which the reduction in real absorption continues but external balance takes place at a higher level of real exports and real imports. It should be noted that, prior to corrective action, the inflationary disturbance induced a fall in real exports and a rise in real imports. The central bank's decision to cease supporting the exchange rate reduces real imports to the reduced level of real exports, but the lower exchange rate, by increasing real exports to their equilibrium level, permits real imports to rise to the same level.

Because of the lower exchange rate, the relevant nominal and real variables are now consistent with the reduced level of real absorption. Redun-

dant nominal cash balances have disappeared, and external balance has been restored at the pre-inflation level of real imports and real exports. The country is in domestic and international equilibrium, with a higher—but stable—price level, thanks to a lower exchange rate and to the termination of an inflationary policy.

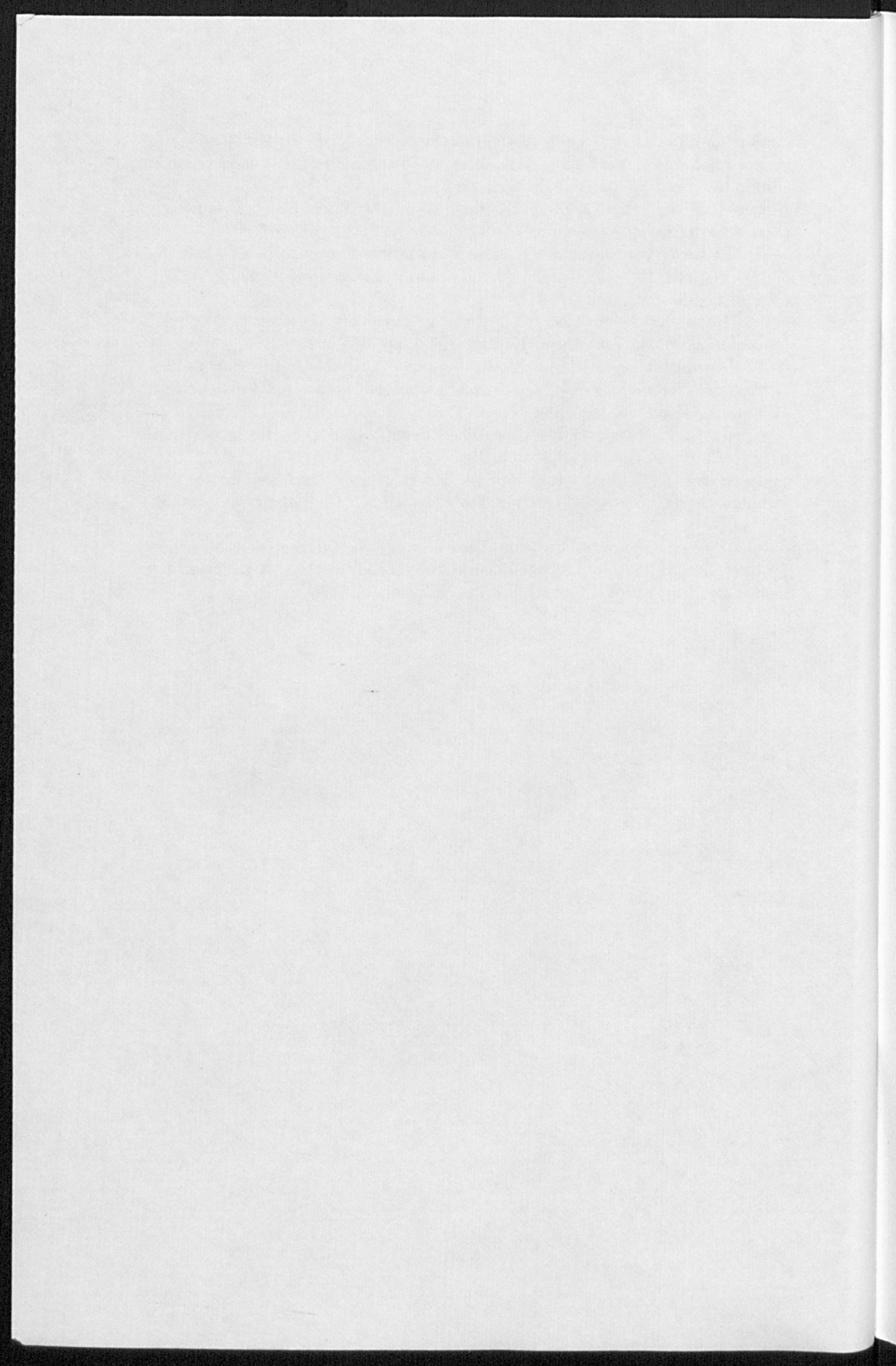
To return to Mundell: In a continuing inflation where nothing is being done to arrest the process, Mundell is right in maintaining that a lower exchange rate (in particular, an unpegged, freely falling rate) is a purely monetary change which simply reflects, rather than corrects, the underlying disequilibrium. But this conclusion is not valid—even in cases where real output cannot be increased—if the inflationary process has been halted. In the case just considered, the change in relative prices and the change in the pattern of production and consumption—changes induced by the lower exchange rate—are real changes which, combined with the abandonment of an inflationary policy, restore the real equilibrium position that had existed before the inflationary disturbance. Where the disequilibrium is of serious proportions, and where nominal wage rates are downwardly rigid, merely stopping the inflation—while maintaining the exchange rate—may entail a sharp decline in output and employment, with much needless pain and with possibly no early improvement in the external position. In such circumstances, a lower exchange rate may be the only sensible way to restore international balance.⁵ Viewed from this perspective, the point has been made by many others, beginning with Keynes in the 1920s. It is embodied in the formula: Stop the inflation and change the exchange rate. If my memory can be trusted, I first heard this prescription, many years ago, from Arthur Bloomfield.

References

- Bloomfield, Arthur I., "Foreign Exchange Rate Theory and Policy," in Seymour E. Harris, ed., *The New Economics: Keynes' Influence on Theory and Public Policy*, New York, Knopf, 1947.
- Corden, W. M., *Inflation, Exchange Rates, and the World Economy: Lectures on International Monetary Economics*, Chicago, University of Chicago Press, 1977.
- Graham, Frank D., *Protective Tariffs*, New York, Harper, 1934; reprinted Princeton, N.J., Princeton University Press, 1942.

⁵ Where external balance has already been achieved by direct controls on international payments, the case for a lower exchange rate—as a substitute for such controls—is particularly strong. In these circumstances, the country's retail price level would tend to *fall* because of the increased imports made possible by increased foreign-exchange earnings. This case is developed in Hinshaw (1958).

- Haberler, Gottfried, *The Theory of International Trade, with Its Applications to Commercial Policy*, New York, Macmillan, 1936 (translated from 1933 German edition by Alfred Stonier and Frederic Benham).
- Hinshaw, Randall, "The Effect of Devaluation on the Price Level: Comment," *Quarterly Journal of Economics*, 72 (November 1958), pp. 616-625.
- , "Elasticity Pessimism, Absorption, and Flexible Exchange Rates," in Willy Sellekaerts, ed., *International Trade and Finance: Essays in Honour of Jan Tinbergen*, London, Macmillan, 1974.
- , "Nontraded Goods and the Balance of Payments: Further Reflections," *Journal of Economic Literature*, 13 (June 1975), pp. 475-479.
- , "Devaluation and Absorption: An Alternative Analysis," in David A. Belsley et al., eds., *Inflation, Trade, and Taxes: Essays in Honor of Alice Bourneuf*, Columbus, Ohio State University Press, 1976.
- , ed., *Global Economic Priorities: The Hamburg Dialogue*, Hamburg, Hamburg Institute of Economic Research, 1983.
- Johnson, Harry G., "The Monetary Approach to the Balance of Payments: A Non-technical Guide," *Journal of International Economics*, 7 (August 1977a), pp. 251-268.
- , *Money, Balance-of-Payments Theory, and the International Monetary Problem*, Essays in International Finance No. 124, Princeton, N.J., Princeton University, International Finance Section, November 1977b.



BIBLIOGRAPHY OF THE SCHOLARLY WORKS
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BOOK

Capital Imports and the American Balance of Payments, 1934-39: A Study in Abnormal International Capital Transfers, Chicago, University of Chicago Press, 1950. Reprinted in 1966, New York, Augustus Kelley; in 1973, Tokyo, in Japanese.

MONOGRAPHS

The British Balance-of-Payments Problem, Essays in International Finance No. 6, Princeton, N.J., Princeton University, International Finance Section, Autumn 1945.

Banking Reform in South Korea (with J. P. Jensen), New York, Federal Reserve Bank of New York, 1951.

Speculative and Flight Movements of Capital in Postwar International Finance, Princeton Studies in International Finance No. 3, Princeton, N.J., Princeton University, International Finance Section, February 1954.

Monetary Policy under the International Gold Standard, 1880-1914, New York, Federal Reserve Bank of New York, 1959.

Central Banking Arrangements for the West Indian Federation, Studies in Federal Economics, No. 2, Mona, Jamaica, University College of the West Indies, Institute of Social and Economic Research, 1961.

Short-Term Capital Movements under the Pre-1914 Gold Standard, Princeton Studies in International Finance No. 11, Princeton, N.J., Princeton University, International Finance Section, July 1963.

Patterns of Fluctuation in International Investment before 1914, Princeton Studies in International Finance No. 21, Princeton, N.J., Princeton University, International Finance Section, December 1968.

Managing the Managed Float (with W. J. Ethier), Essays in International Finance No. 112, Princeton, N.J., Princeton University, International Finance Section, October 1975.

ARTICLES

"The Canadian Wheat Pools: 1929-36," *Canadian Chartered Accountant* (March 1937), pp. 232-247.

"The Foreign Trade Doctrines of the Physiocrats," *American Economic Review*, 28 (December 1938), pp. 716-735; reprinted in J. J. Spengler and W. R. Allen, eds., *Essays in Economic Thought*, Chicago, Rand McNally, 1960.

"The Significance of Outstanding Securities in the International Movement of Capital," *Canadian Journal of Economics and Political Science*, 6 (November 1940), pp. 495-524.

- "The Mechanism of Adjustment of the American Balance of Payments: 1919-29," *Quarterly Journal of Economics*, 57 (May 1943), pp. 333-377.
- "Operations of the American Exchange Stabilization Fund," *Review of Economics and Statistics*, 26 (May 1944), pp. 69-87.
- "Postwar Control of International Capital Movements," *American Economic Review*, Papers and Proceedings, 36 (May 1946), pp. 687-709.
- "Foreign Exchange Rate Theory and Policy," in Seymour E. Harris, ed., *The New Economics: Keynes' Influence on Theory and Public Policy*, New York, Knopf, 1947.
- "Induced Investment, Overcomplete International Adjustment, and Chronic Dollar Shortage," *American Economic Review*, 39 (September 1949), pp. 970-975.
- "Report and Recommendations on Banking in South Korea," *Monthly Statistical Review of the Bank of Korea* (June 1952), pp. 15-72.
- "Three Studies on United States Foreign Economic Relations," *Review of Economics and Statistics*, 36 (February 1954), pp. 109-112.
- "Monetary Policy in Underdeveloped Countries," *Public Policy*, C. J. Friedrich and S. E. Harris, eds., 6 (Fall 1956), pp. 232-274.
- "Some Problems of Central Banking in Underdeveloped Countries," *Journal of Finance*, 12 (May 1957), pp. 190-204.
- "The Radcliffe Report: An American Impression," *Westminster Bank Review* (November 1959), pp. 15-20.
- "Official Intervention in the Forward Exchange Market: Some Recent Experiences," *Banca Nazionale del Lavoro Quarterly Review* (March 1964), pp. 3-43 (also in Italian).
- "Rules of the Game of International Adjustment?" in C. R. Whittlesey and J.S.G. Wilson, eds., *Essays in Money and Banking* (in honor of R. S. Sayers), London, 1968, pp. 26-46.
- "Recent Trends in International Economics," *Annals of the American Academy of Political and Social Science* (November 1969), pp. 148-167.
- "Mouvements de Capitaux et Crises Monétaires," *Economie Appliquée* (No. 4, 1970), pp. 483-504.
- "Controlling Private Short-Term Capital Outflows from the United States," *Wharton Quarterly*, 5 (Summer 1971), pp. 4-11.
- "Living with Floating Exchange Rates," *Wharton Quarterly*, 7 (Winter 1973), pp. 2-10.
- "European Monetary Unification: The Historical Setting," in L. B. Krause and W. S. Salant, eds., *European Monetary Unification and Its Meaning for the United States*, Washington, 1974, pp. 1-30.
- "Adam Smith and the Theory of International Trade," in A. S. Skinner and T. Wilson, eds., *Essays on Adam Smith*, Oxford, England, Oxford University Press, 1975, pp. 455-481.
- "The Management of Floating Exchange Rates" (with W. J. Ethier) in P. Boarman, ed., *World Monetary Disorder*, New York, Praeger, 1976.

- "Developments in International Economics" (with W. J. Ethier), in S. Weintraub, ed., *Modern Economic Thought*, Philadelphia, University of Pennsylvania Press, 1976, pp. 517-535.
- "The Reference Rate Proposal and Recent Experience" (with W. J. Ethier), *Banca Nazionale del Lavoro Quarterly Review* (September 1978), pp. 213-232.
- "Impact of Growth and Technology on Trade in Nineteenth Century British Thought," *History of Political Economy*, 10 (No. 4, 1978), pp. 608-635.
- "Policies for an OPEC Dollar Run" (with R. C. Marston), *Journal of Post Keynesian Economics*, 3 (No. 3, 1981), pp. 299-311.
- "British Thought on the Influence of Foreign Trade and Investment on Growth, 1800-1880," *History of Political Economy*, 13 (No. 1, 1981), pp. 96-120.
- "An Early Anticipation of the Concept of Immiserizing Growth," *Journal of International Economics*, 11 (1981), pp. 423-427.
- "Sidney Weintraub: A Profile," *Journal of Post Keynesian Economics* (Winter 1981-82), pp. 291-300; reprinted in *Eastern Economic Journal* (October-December 1983), pp. 285-290.
- "Haskell Wald, September 6, 1916-November 29, 1981," *Journal of Post Keynesian Economics* (Summer 1982), pp. 620-622.
- "La Experiencia de la Comunidad Europea en los aspectos monetarios y financieros de la integración económica," *Integración Latinoamericana* (November 1982), pp. 3-14.
- "Effect of Growth on the Terms of Trade: Some Earlier Views," *Economica*, 51 (May 1984), pp. 187-193.
- "La Experiencia de la Union Europea de Pagos y su posible aplicabilidad a America Latina," *Integración Latinoamericana* (October 1984), pp. 21-32.

MISCELLANEOUS

- Comment in Symposium on International vs. Domestic Equilibrium, *American Economic Review*, Papers and Proceedings, 37 (May 1947), pp. 581-583.
- "Bill of Exchange in Practice," *Encyclopedia Britannica*, 1947 ed.
- Comment on "The Self-Adjusting Mechanism of International Transfer," *Econometrica*, 19 (July 1951), p. 339.
- Staff Papers*, Washington, Randall Commission of Foreign Economic Policy, 1954, Chaps. 1 and 10.
- Report and Recommendations on the Korean Reconstruction Bank*, Seoul, Korea, 1960.
- Comment in Symposium on Problems of International Harmony, *American Economic Review*, Papers and Proceedings, 50 (May 1960), pp. 294-296.
- "The Gold-Exchange Standard," testimony before the U.S. Congress, Joint Economic Committee, *The United States Balance of Payments*, Part 3, November 1963, pp. 349-356.
- Contributor to F. Machlup and B. G. Malkiel, eds., *International Monetary Arrangements: The Problem of Choice*, Princeton, N.J., Princeton University, International Finance Section, 1964.

- Comment in Symposium on the Balance of Payments and Domestic Monetary Policy, *Journal of Finance*, Papers and Proceedings, 21 (May 1966), pp. 363-368.
- Contributor to R. Hinshaw, ed., *The Economics of International Adjustment*, Baltimore, Johns Hopkins Press, 1971.
- Comment in F. Machlup, W. S. Salant, and L. Tarshis, eds., *International Mobility and Movement of Capital*, New York, National Bureau of Economic Research, 1972, pp. 78-83.
- Contributor to R. Hinshaw, ed., *Inflation as a Global Problem*, Baltimore, Johns Hopkins Press, 1972.
- "Arab Oil Money and the Iranian Dollar Freeze," *Puerto Rico Economic Quarterly* (September 1979).
- Contributor to R. Hinshaw, ed., *Global Monetary Anarchy*, Beverly Hills, Calif., Sage Publications, 1981.
- "The Gold Standard," in D. Greenwald, ed., *Encyclopedia of Economics*, New York, McGraw-Hill, 1982.
- Contributor to C. P. Kindleberger and J. P. Laffargue, eds., *Financial Crises: Theory, History, and Policy*, Proceedings of a conference in May 1979 in Bad Homburg, Germany, Cambridge, England, Cambridge University Press, 1982.

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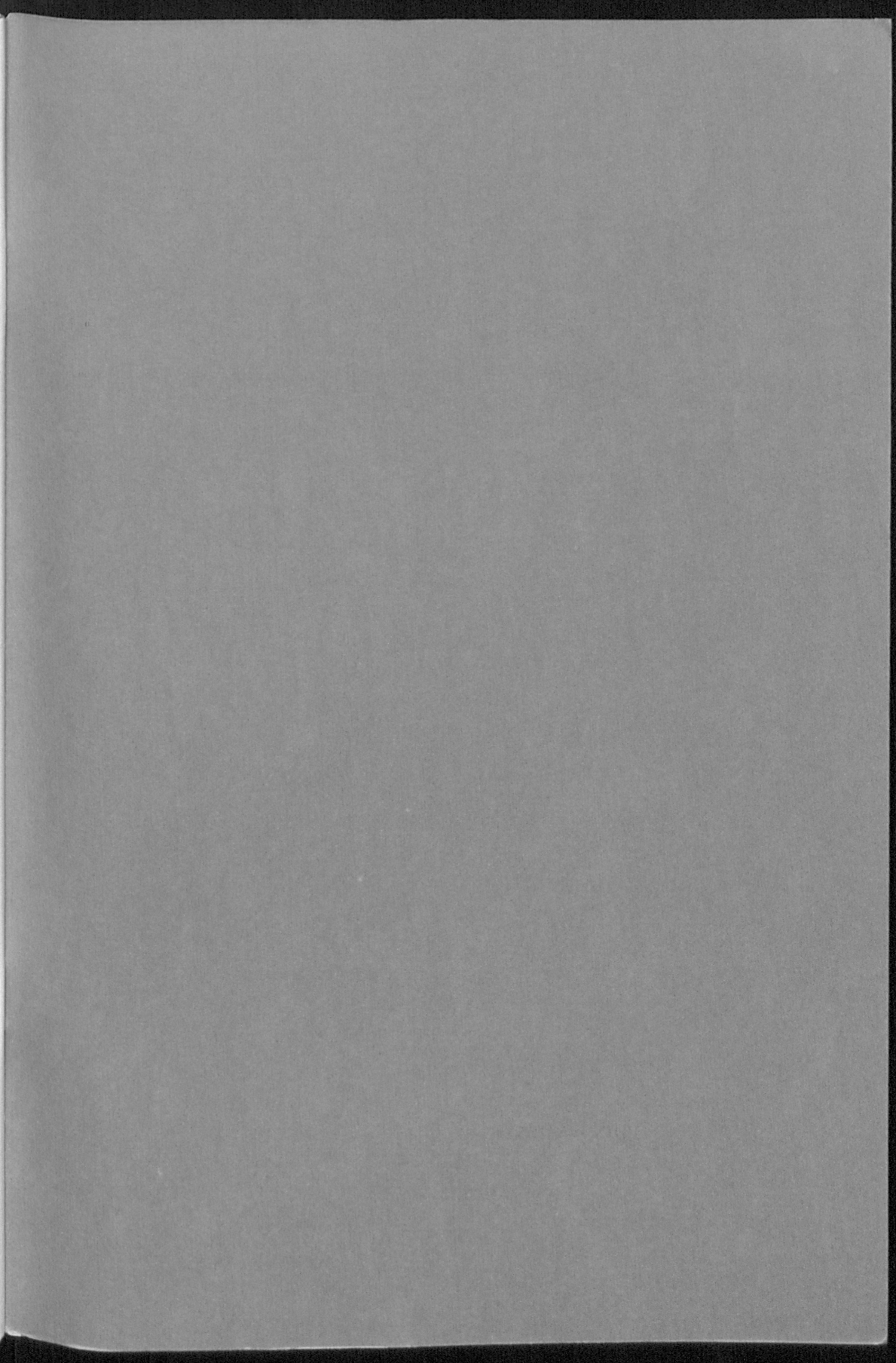
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