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UNEXPECTED REAL CONSEQUENCES OF
FLOATING EXCHANGE RATES

RACHEL McCULLOCH



INTERNATIONAL FINANCE SECTION

DEPARTMENT OF ECONOMICS

PRINCETON UNIVERSITY

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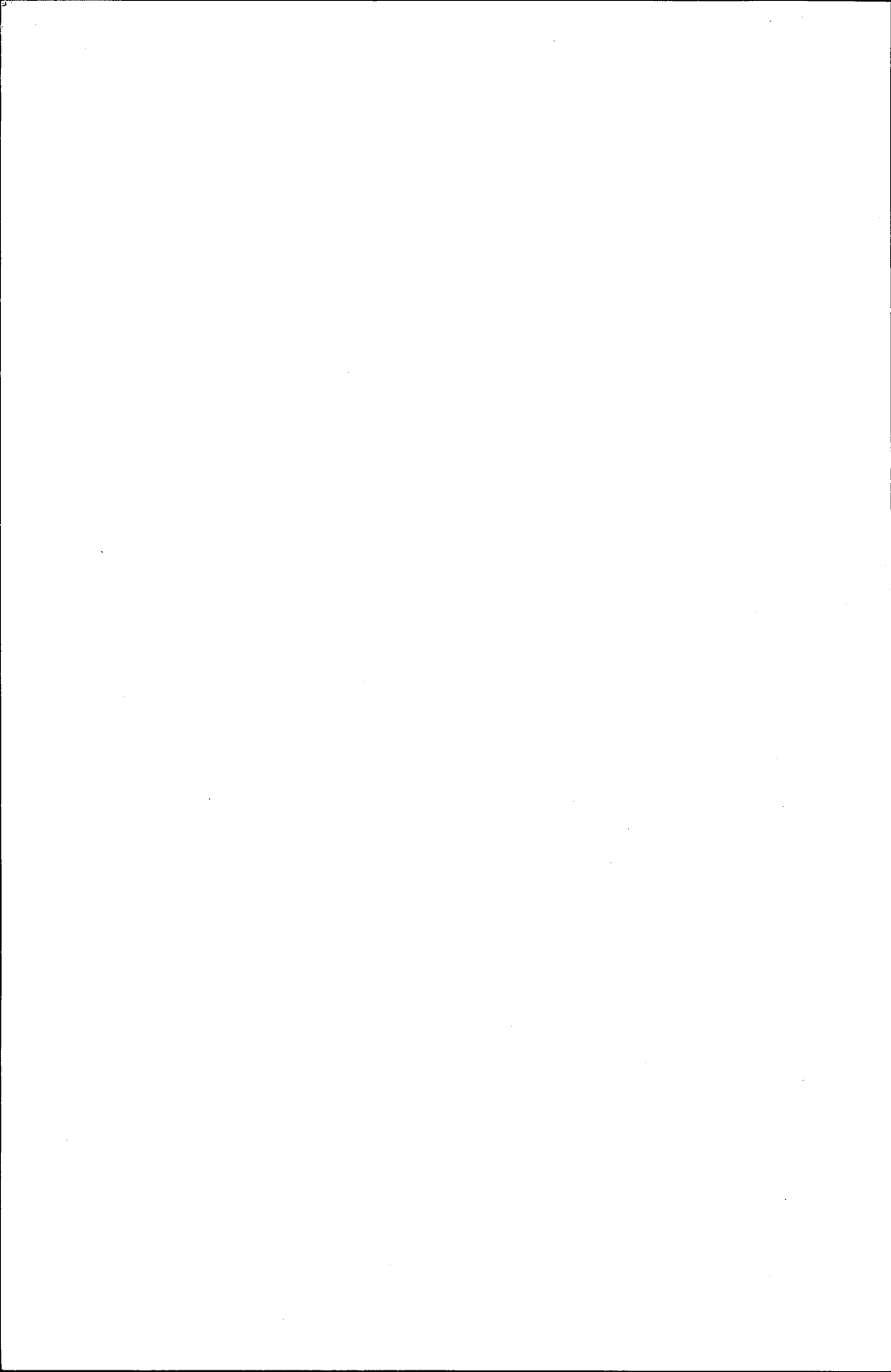
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Unexpected Real Consequences of Floating Exchange Rates

After a decade of floating exchange rates, international monetary reform is again in the air, and it is thus timely to ask how well (or badly) the current system is functioning. But compared to what? Because the current monetary arrangements came into effect following years of vigorous debate on the merits of exchange-rate flexibility, some observers appear to forget that these arrangements were not in reality “designed” or even “adopted” by the International Monetary Fund. Rather, the present regime was initiated by the collapse of the Bretton Woods system, following prolonged and heroic salvage efforts. As late as 1972, a report on international monetary reform by the Executive Directors of the IMF failed even to mention flexible exchange rates as a viable long-term option (IMF, 1972), while an earlier report explicitly concerned with the role of exchange rates in the adjustment process had devoted only one of seventy-eight pages to floating rates (IMF, 1970). The markedly after-the-fact Second Amendment of the IMF Articles of Agreement to legalize the status quo merely reflected recognition of member governments’ inability to agree on an alternative—any system imposing even minimal restraints on national policies—rather than an affirmation of the benefits of floating.

The central and still unresolved issue in the fruitless debate over international financial arrangements was the desire to preserve national autonomy in the face of growing economic and political interdependence. Since the present time seems no more propitious than the early 1970s for the willing sacrifice of national sovereignty by IMF members, any argument for system reform must be solidly grounded in the accumulated experience with floating, not by reference to the dogmas of the Bretton Woods era. This Essay is an eclectic assessment of that experience, with particular reference to the ways in which events have confounded both advocates and

This paper is adapted from one prepared for the Wingspread Conference on the Evolving Multiple Reserve Asset System, July 28-30, 1982. I am grateful to J. David Richardson for extensive and stimulating discussions of the subject. I am indebted also to Robert E. Baldwin, Charles P. Kindleberger, Michael Rothschild, André Sapir, Janet Yellen, and conference participants at Wingspread and the 1982 National Bureau of Economic Research Summer Institute for helpful suggestions, and to the University of Wisconsin Graduate School for financial support.

critics of floating. Although there is some discussion of the consequences of the floating-rate regime for worldwide macroeconomic performance, the main focus is on microeconomic issues—specifically, the role of floating rates in facilitating or retarding the growth of world trade and investment.

International Money and the Goals of Bretton Woods

National money, in its time-honored functions as medium of (indirect) exchange, unit of account, standard of deferred payment, and store of value, is supposed to facilitate the efficient allocation of resources in production and consumption. Although the precise nature and magnitude of the efficiency gains have never been spelled out fully in economic analyses, monetary history gives clear evidence of significant real resource costs and unanticipated redistributions of wealth when money fails to perform its traditional functions. At the same time, control of a nation's money supply also constitutes a potent tool of macroeconomic management and an alternative to taxation as a means of financing government expenditure. Thus, conflicting objectives confront those who conduct monetary policy, and there are both microeconomic and macroeconomic bases on which to judge their performance.

Analogously, the international monetary system is supposed to facilitate an efficient allocation of resources worldwide, presumably through trade guided by comparative advantage, but it also has important consequences for global macroeconomic conditions. This twofold function was explicitly recognized in the Articles of Agreement of the International Monetary Fund approved at Bretton Woods in 1944, which listed among the purposes of the Fund:

To facilitate the expansion and balanced growth of international trade, and to contribute thereby to the promotion and maintenance of high levels of employment and real income and to the development of the productive resources of all members as primary objectives of economic policy (Articles of Agreement, Article I(ii)).

As inadequacies in the Bretton Woods system became apparent during the 1960s, criticisms and proposals for reform likewise fell into two distinct categories.

Macroeconomic Performance

The Bretton Woods system was held to impart a deflationary bias to the world economy on account of the asymmetrical positions of surplus and

deficit countries—at least in the rules, if not in the actual behavior, of member nations. At a time when the prospects for “fine tuning” of national macroeconomic performance seemed bright, the obligations of member nations under the Bretton Woods rules appeared to limit the ability of elected governments to deliver the combination of inflation and unemployment desired by their constituents. Although theory suggested that control of two instruments—monetary policy and fiscal policy—should allow enlightened policymakers to achieve both “internal balance” and “external balance,” thoughtful analysts stressed that other objectives, notably adequate long-run growth, could be jeopardized by this textbook solution.

Because the Bretton Woods rules appeared to constrain national governments, advocates of reform and especially of increased exchange-rate flexibility appealed to the need for greater macroeconomic independence. Most reform proposals, however, called for modification rather than scrapping of the Bretton Woods rules. Two popular evolutionary plans were the crawling peg and the widening of exchange-rate margins, the latter actually adopted in 1971 as part of the short-lived Smithsonian Agreement. Interestingly, Cooper had seen wider bands as a feasible means of increasing independence but noted a disadvantage “from the viewpoint of fostering international cooperation . . . of *not* affording an occasion for close international consultation” (1968, p. 263).

Subsequent events suggest that advocates of increased flexibility failed to distinguish adequately between institutional and economic constraints on the actions of national policymakers. The collapse of the Bretton Woods system clearly increased the national sovereignty of IMF members with regard to the conduct of macroeconomic policy but had at most a minor effect on the ability of member nations to achieve desired outcomes. Countries acquired the technical capacity to pursue autonomous monetary policies because they were no longer required to peg their exchange rates, but they were severely constrained in exercising this autonomy on account of the undesirable effects of large exchange-rate movements on their domestic economies. Furthermore, the system of flexible exchange rates could not suppress structural interdependence; the system proved to offer ample channels for the continued international transmission of macroeconomic disturbances.

Even so, the chief flaws in the standard macroeconomic arguments for flexibility had less to do with their predictions about independence than with the now-evident defects in the macroeconomic paradigms, both Keynesian and monetarist, on which they were based. That national econ-

omies failed to respond according to the predictions of ingenious 1960s models can be blamed on many aspects of human behavior that are usually assumed away for analytic convenience. Perhaps most important and surely most striking is the demonstrated capacity of market participants for profitable innovation—a description more optimistic than the pejorative “structural instability” sometimes conjured up to explain the failure of econometric models to predict human behavior in times of rapid economic and social changes.¹

Controlling Inflation

A related issue in the pre-1973 debate concerned the implications of the exchange-rate regime for the propensity of national officials to engage in inflationary policies. According to one standard argument, “the need to defend a fixed rate or a par value induces monetary and fiscal authorities to take greater care to prevent inflation; if floating rates were adopted, discipline would be weakened and countries would be more likely to pursue inflationary policies” (Solomon, 1977, p. 287). Indeed, the case for flexibility as a means of increasing macroeconomic independence implies precisely that some nations will opt for higher inflation rates when freed from the “external constraint” of a fixed parity. A similar but distinct argument is that a democratic government (or even one that is not so democratic) may find defense of a par value a politically acceptable reason to resist the competing claims of various domestic groups for increased shares of a relatively fixed national income (Caves and Jones, 1973, p. 444). As Caves and Jones note, however, a government might just as well point to “disgraceful” depreciation of a flexible rate. In the post-1973 period some have done exactly that.

The standard arguments sometimes acknowledged the inflationary potential of exchange-rate changes themselves, whether rates are flexible or adjustable, but only after 1973 did attention shift to this line of causation and thus away from the “nail-the-flag-to-the-masthead” argument for fixed rates. Although the inflationary pressures attending any devaluation or deprecia-

¹ Meese and Rogoff (1983) found that a random walk performed as well out of sample as any estimated structural model of exchange-rate determination. In an earlier version of the same paper (Meese and Rogoff, 1981), the authors attributed the poor out-of-sample performance of these models to “structural instability.” But the authors noted in the revised version that it is more accurate to describe the problem as one of omitted variables or other misspecifications of the underlying structural relationships. In other words, simple models cannot predict complex responses.

tion had long been emphasized by experts on less-developed countries, analyses for the industrialized nations tended to ignore the possibility, perhaps because of their Keynesian underpinnings. For example, the "absorption" literature stressed the importance of aggregate excess capacity in determining the degree to which the effects of a devaluation would be quickly offset by induced inflation.

The post-1973 inflationary experience was too dramatic to be ignored. Much subsequent debate has therefore centered on whether flexibility provides an independent source of inflationary pressure via a "ratchet" mechanism that pushes up domestic prices when a currency's value declines but fails to push them down at times of currency appreciation. Despite its intuitive appeal, however, empirical evidence for the ratchet effect appears to be weak (Goldstein, 1980). One important competing explanation for the failure to anticipate fully the inflationary impact of devaluation or depreciation was the tendency to underestimate the true openness of industrial economies, or, more precisely, the strength of the linkage between international prices of traded goods and domestic prices of nontraded goods (on this linkage, see Chipman, 1981, and McKinnon, 1981).

Living with Exchange Risk

Pre-1973 microeconomic arguments for floating exchange rates stressed their role in encouraging "unrestricted multilateral trade" (Friedman, 1953, p. 137). While rigidly fixed exchange rates like those of the classical gold standard were conceded to provide many of the benefits of a single world money, the Bretton Woods system of adjustable pegs had major shortcomings. Balance-of-payments disequilibria were frequently met by direct controls on trade and capital flows rather than the domestic macroeconomic policy responses prescribed by the "gold-standard rules of the game." Advocates of exchange-rate flexibility argued that it would produce appropriate exchange-rate movements, ensure prompt balance-of-payments adjustment, and thus obviate the need for direct controls that distort global resource allocation. But although proponents of flexible rates were virtually unanimous on this point, some critics foresaw incentives for protectionism (see, e.g., Wallich's comments in Haberler *et al.*, 1969, p. 362).

Of course, even pegged rates could and did change. Therefore, the appropriate comparison was not between floating and fixed rates but between rates changing by small amounts on a day-to-day basis and those changing by substantial percentages at longer intervals and usually only after mac-

roeconomic policy debacles, welfare-reducing direct controls, and repeated foreign-exchange-market crises. Some critics warned, however, that the day-to-day movements of floating rates would not be small. Skeptics envisioned low price elasticities, long lags, exchange-rate overshooting, and destabilizing speculation that would result in wide fluctuations in market-determined rates—a specter of the 1930s that (along with competitive devaluation) the IMF Articles of Agreement specifically pledged to exorcise. Large fluctuations in rates, it was said, would increase the uncertainty facing international traders and investors. Although forward markets and a variety of other, more complicated mechanisms could provide transactors with insurance against rate changes, some warned that the additional cost would push world trade back toward barter (Kindleberger, 1970, p. 224).

Subsequent events have provided ample reason for extreme modesty on the part of prognosticators in both camps. Market-determined exchange rates have exhibited instability beyond the fondest nightmares of fixed-rates fanatics, yet trade and investment flows seem relatively unaffected by these changes. Blackhurst and Tumlin (1980, pp. 13-16) have noted that the volume of world trade continued to grow more rapidly than production throughout the 1970s, consistent with their hypothesis that the major determinant of changes in the level of trade is underlying GNP growth. Examining the effects of exchange-rate uncertainty on the multilateral and bilateral trade flows of the United States, Germany, and several other industrial countries for the period 1965-75, Hooper and Kohlhagen (1978, p. 505) “found absolutely no significant effect on the volume of trade (at the 0.95 level) despite considerable effort and experimentation. . . .” They did find a significant impact on prices, suggesting that the absence of any impact on volume might reflect relatively inelastic short-run supplies of exports or, alternatively, substantial hedging by importers and exporters.

These apparently contradictory phenomena may also be reconciled by the observation that the only alternatives to risky international transactions are risky domestic transactions. Of the many large risks of all types that any commercial endeavor now entails, exchange-rate uncertainty may be relatively minor compared with the benefits of foreign trade and investment. The risk is appreciable but the profitability even more so. As foreign-exchange risk is highly diversifiable, international operations provide an important means of diluting risks associated with domestic transactions rather than an independent addition to risk.

Market-Determined Exchange Rates

The central message of recent experience is that the foreign-exchange market is an asset market and that the economic laws governing exchange rates are fundamentally similar to those governing other asset prices—with stock and bond markets providing obvious domestic analogies. In fact, while exchange rates have indeed been volatile, their volatility has been less than that of stock prices (Frenkel and Mussa, 1980). Some recent literature has attempted to judge whether the volatility of observed asset prices is “excessive,” i.e., unjustified by movements in their fundamental determinants. Shiller (1981) found evidence that the volatility of stock prices is excessive in relation to underlying uncertainty about future dividends, at least if risk neutrality is assumed. Although his statistical methodology has been questioned by subsequent researchers, any similar test of exchange-rate behavior rests on still shakier ground. As Meese and Singleton (1982) have pointed out, a test of whether exchange-rate volatility is excessive must be predicated on the validity of a particular structural model, and there are several active contenders. Furthermore, as Frenkel and Mussa note, even a determination of excessive volatility has no obvious policy implications.

Related to these findings is the discovery that the celebrated “law of one price” is not strictly enforced by real-world markets and that purchasing power parity, which perhaps ought not to have held in any case, has evidently collapsed (Frenkel, 1981).² As a consequence, the once-prevalent notion that an exchange rate behaves like the ratio of two national price indices must be scrapped and the role of exchange-rate movements in equilibrating international transactions reevaluated.

Controls on Trade and Capital Flows

A market-determined exchange rate necessarily equates day-to-day supply and demand for a nation's currency, whether or not supplemented by official reserve transactions. Thus, the need for direct controls motivated by overall balance-of-payments considerations is indeed eliminated by floating rates. The result has been, as predicted, an important reduction in the use

² Although there is a rich literature spanning at least four decades on the reasons why purchasing power parity need not hold over short or even long time periods (see, e.g., Chipman, 1981), the notion persists that its absence somehow violates fundamental precepts of rational economic behavior.

of capital controls for balance-of-payments purposes. But asset preferences can and do produce significant prolonged divergences between the market price of a currency and its apparent "real" worth as determined by purchasing power parity. There is therefore no reason to expect a floating-rate system to eliminate incentives for direct controls motivated by current-account considerations.

While current-account balances have exhibited surprising (though lagged) responsiveness to rate movements, the reverse effect of current-account imbalances on exchange-rate movements is evidently much weaker. Indeed, floating rates react only to the extent that current-account imbalances constitute one type of "news" affecting asset preferences. Accordingly, macroeconomic incentives for protection, to increase domestic aggregate demand as well as to achieve sector-specific goals, are largely unaffected by floating rates.

The actual post-1973 experience has been characterized by the persistence and even extension of sectoral protection in the major industrialized countries, mainly for industries that are losing their competitiveness in relation to counterparts in Japan and especially the newly industrializing countries. Although there has been no apparent trend toward the increased use of protection (or competitive devaluation) as a means of macroeconomic stimulus, an assumed net gain in aggregate employment is customarily used—as in the Bretton Woods era—to bolster the case for proposed sectoral interventions, especially when large industries such as apparel and automobiles are involved. The Cambridge Economic Policy Group has promulgated a macroeconomic case for across-the-board protection of British industry, but with no noticeable effect thus far on the policies of the Thatcher government. Japan is sometimes accused of engaging in policies to prevent appreciation of the yen, especially through restrictions on inward foreign investment. But the main evidence presented in support of this hypothesis is unbalanced bilateral trade with the United States, a condition that also accompanied an allegedly overvalued yen in previous years.

Further aspects of the relationship between protection and exchange-rate movements are considered in subsequent sections.

Implications for Foreign Direct Investment

The "overvalued" dollar of the 1960s was singled out as an important reason, even *the* important reason, for the large volume of U.S. direct investment abroad, particularly in Europe. Through acquisitions of existing na-

tional enterprises and the construction of new plant and equipment, U.S.-based multinationals achieved a major presence in the protected markets of the newly created European Economic Community—investments all the more attractive at prevailing exchange rates. This role of disequilibrium exchange rates in foreign-investment decisions was initially confirmed by events of the 1970s. As the dollar plummeted in relative value through two devaluations and subsequent market depreciation, foreign direct investment in the United States grew with unprecedented rapidity—enough to make the United States the world's leading *host* country (in absolute but not relative terms) by the end of the decade. Yet the strengthening of the dollar since 1978 has not stemmed the flow of new foreign direct investment, and exchange-rate volatility has had no noticeable impact on its volume.

Why have foreign investors been undeterred by exchange-rate turbulence? There are several plausible lines of explanation, not mutually exclusive, that invoke the *relative* advantages of multinational firms over national enterprises. Thus, the finding that foreign direct investment continued to increase after 1973 does not rule out real costs associated with increased exchange-rate uncertainty.

As already noted, one anticipated benefit of floating that has actually materialized is a marked reduction in the use of direct capital controls. This trend facilitates new or expanded investments, while at the same time increasing their attractiveness by improving prospects for the unimpeded repatriation of profits and royalties. Moreover, direct investment decisions are based on long-term plans, for periods during which even a pegged rate might well be expected to change. Over the life of an investment, the effects of volatility on profits largely cancel out, whereas cumulative movements in exchange rates, whether pegged or floating, mainly compensate for differential rates of domestic inflation or productivity growth across countries. A floating-rate system might even stimulate investment by easing such compensating exchange-rate adjustments and thereby reducing the likelihood of new direct controls on capital or trade flows during the investment period.

Foreign direct investment is also influenced by many considerations apart from exchange risk or the lack of it. If, as past studies suggest, protection is an important motive for direct investment, the recent protectionist swing in the United States—both actual and threatened—may have elicited investments intended to protect large expenditures already incurred in the

development of the lucrative U.S. market. Recent Japanese investments in the United States may fall into this category. Furthermore, the accumulation of wealth by OPEC surplus nations has increased demands for assets of all kinds, and the post-1973 "internationalization" of the supply of saving probably favors U.S. assets because of the relative size and stability of the American economy. However, official statistics are uninformative on this point, since many OPEC investments are held anonymously through third-country intermediaries.

Finally, as suggested above and exactly contrary to pre-1973 conventional wisdom, floating may provide an important independent incentive for foreign direct investment. Input-price uncertainty is a recognized motive for vertical integration; a regime of floating rates accordingly provides incentives for vertical multinational integration. Together with centralized management, vertical integration allows a substantial reduction in the variability of profits due to exchange-rate movements between input-source countries and the downstream user.³ This explanation fits the Canadian floating-rate period, which was marked by continued expansion of U.S. direct investments in Canadian extractive industries. Likewise, the reduction of input-price uncertainty may be a second motive (in addition to increased actual and threatened protection) for recent Japanese investments in the United States. Horizontal global expansion may similarly be favored by floating rates. For production operations in which minimum efficient scale is relatively low or scale economies unimportant, global diversification of production facilities allows firms some opportunity to optimize with respect to medium-term movements in real exchange rates as well as enhanced leverage in dealings with national labor unions.⁴

The vertical and horizontal expansions motivated by exchange-rate vari-

³ Centralized management also facilitates optimization of foreign-exchange exposure, reducing the need for forward-market cover. Aliber (1983) has suggested that the lower cost of internal cover provides an advantage to multinational firms over domestic ones.

⁴ Expanded international operations in the 1970s may also reflect efforts to minimize the impact of exchange-rate movements on reported profits. Despite all the good reasons adduced by economic theorists to show that rational managers should be indifferent to the variability of accounting profits, managers persist in their concern about period-to-period fluctuations in reported earnings. F.A.S.B. Statement Number 8, the Financial Accounting Standards Board's first attempt to develop standardized accounting principles for a world of day-to-day movements in exchange rates, resulted in large and probably meaningless fluctuations in reported earnings (Hekman, 1981). The resulting storm of protests produced F.A.S.B. Statement Number 52, which broadens the definition of exposure and calls for an adjustment to net worth rather than to earnings.

ability help to explain the rapid growth of intra-industry and intra-firm trade during the 1970s. They have opposite implications, however, for the responsiveness of trade flows to movements in exchange rates. While vertical integration allows a firm to ignore changes in the rate, horizontal integration offers opportunities to profit from them through adjustments in trade flows.

Exchange Rates, Relative Prices, and Competitiveness

A major surprise of the 1970s was the discovery that the United States is not a closed economy. The old and erroneous characterization (see, e.g., comments by Wallich in Haberler *et al.*, 1969, pp. 360-361) rested in part on a confusion of *traded* with *tradable* goods; for a large country like the United States, openness is consistent with low ratios of exports and imports to total domestic shipments.⁵ Closely linked was the failure to anticipate the importance of exchange-rate changes for domestic prices. Early and crude estimates of the inflationary impact of dollar devaluation assumed that the prices of imported goods would be the only ones affected.

Elasticities and the Law of One Price

Analysts had been misled in part by the traditional elasticities approach to exchange-rate changes. The elasticities approach entailed a basically Keynesian view of price movements. Domestic-currency prices (or supply curves) for exports and import substitutes were assumed to be independent of the exchange rate. A related assumption, crucial but always implicit, was that domestic and foreign goods are not highly substitutable, so that domestic producers of tradables face appreciably downward-sloping demand curves for their outputs even in the long run. Given these assumptions, the primary effect of a devaluation would be to alter the relative prices of domestic goods and their foreign counterparts, shifting domestic and foreign demands toward domestic goods. A devaluing nation with some excess capacity could therefore expect a durable improvement in the international price competitiveness of its export and import-competing industries and a resulting durable improvement in its trade balance. The same logic was carried over to open-economy versions of Keynesian macroeconomic models, in

⁵ Openness also increased in the 1970s, but authors of textbooks on macroeconomics nonetheless continue to relegate any consideration of openness to the final chapters.

which the exchange rate served as a policy instrument for switching aggregate expenditure between foreign and domestic markets.

The unexpectedly large impact of exchange-rate changes on domestic prices in the United States, along with the many cases in which devaluation failed to produce a durable improvement in the trade balance, led analysts to discard the elasticities approach and its underlying assumptions. With considerable fanfare, the era of the monetary approach was ushered in. Central to the elasticities approach is the implicit assumption that the law of one price is not applicable; domestic-currency prices of domestically produced tradables can move independently of the domestic-currency prices of their foreign counterparts. Exponents of the monetary approach chose an opposite but equally extreme assumption, making the law of one price the centerpiece of their models. Domestically produced exports and import-competing goods were now taken to be perfect substitutes for their foreign counterparts; accordingly, their domestic-currency prices were necessarily identical at all times.

Under these new assumptions, a devaluation must increase the prices of domestically produced tradables to restore equality with the prices of their foreign substitutes. For a small country, the domestic prices of all tradables would rise by exactly the amount of the devaluation. Accordingly, an exchange-rate change affects primarily the prices of tradables relative to those of nontradables, rather than the prices of domestic goods relative to those of foreign goods. While the higher relative prices of tradables implies an increase in their domestic supply, domestic demand is shifted *away* from all tradables toward nontradables, eventually raising the prices of the latter and restoring the initial allocation of resources in domestic production. A key implication of such models is that devaluation cannot improve the internal price competitiveness of domestic suppliers.

But again events confounded theories, and again the problem centered on the law of one price—unduly disregarded in the elasticities approach but exalted beyond empirical justification by advocates of the monetary approach. As producers of almost any tradable good will be happy to affirm, exchange-rate movements *are* important for the overall international competitiveness of domestic industries; for some nonnegligible period, exchange-rate movements can and do alter the prices of domestic goods relative to those of foreign goods.

While the law of one price (for any one “good”) assumes a high degree of substitutability in consumption or production between domestic tradables and their foreign counterparts, as well as markets that are highly com-

petitive, empirical investigation reveals that these conditions do not hold for most tradable goods, at least over the relatively short periods with which macroeconomic policy is concerned. Rather, for reasons having to do with product differentiation, trade barriers, delivery lags, distribution, and servicing, tradables are heterogeneous in their adherence to the law of one price, or, more precisely, in their adherence to its preconditions. "Substantial changes in exchange rates typically have substantial and persistent effects on the relative common currency prices of closely matched manufactures produced in different countries" (Isard, 1977, p. 948).

Recognizing that tradable goods are heterogeneous brings the analysis almost full circle to a framework in which elasticities again play a key role. An important implication is that the price effects of devaluation are not typically uniform across industries producing tradable goods.

Sectoral Consequences of Changes in Exchange Rates

Sector-specific consequences within the aggregate of "tradables" attracted the attention of econometric modelers first (see, e.g., Hooper and Lowrey, 1979). More recently, theorists have also begun to explore the crucial role of "structural" characteristics such as supply elasticities and wage rigidities or wage indexation in open-economy macroeconomic analysis, thereby sacrificing some of the simplicity and elegance of highly aggregated models but shedding new light on sectoral effects (see Branson, 1982, and references cited there).

Where substitutability and therefore cross-price elasticities are high and markets competitive, there will be strong forces equating the domestic-currency prices of foreign-produced goods with those of domestically produced versions. A devaluation will therefore cause domestic prices to rise—by the full amount of a devaluation in the case of a small country that has no appreciable effect on international prices. Domestic supply, employment, and profits will rise; domestic consumption will fall.

For an industry in which domestic and foreign versions are highly imperfect substitutes, devaluation has much weaker short-run consequences for the domestic price. The increased domestic-currency price of the imperfect foreign substitute results in an outward shift in the domestic industry's downward-sloping demand curve. The effects on equilibrium price thus depend crucially on conditions of domestic supply. Domestic output, employment, and profits will rise; domestic and foreign consumption of the industry's output will rise on account of the favorable movement in its relative price. Moreover, with goods or services that are highly differentiated,

each *producer* faces a distinctly downward-sloping demand curve, so that markets may be characterized by price discrimination. In such markets, an exchange-rate change may actually have a “perverse” effect on output and price, although not on profits.

Exchange-rate changes also affect industry supply curves through their consequences for the domestic-currency prices of tradable inputs. As noted above, the size of price changes depends critically upon the extent to which foreign and domestic versions are highly substitutable; the speed with which these price changes are reflected in higher production costs depends on the extent to which suppliers are bound by long-term commitments. One measure of the total impact of devaluation on a given industry through both output and input markets is the *net* effect on industry value added. As in the analysis of the “effective protection” that a nation’s tariff schedule provides to a particular industry, i.e., the percentage by which industry value added per unit of output can exceed its free-trade level, a calculation can in principle be made of the *net* effect of “exchange-rate protection” on an industry’s value added. A devaluation will raise domestic-currency value added by exactly the percentage of the devaluation only for an industry in which domestic and foreign goods are highly substitutable on both the output and input sides *and* effects on world prices of the industry’s output sales and input purchases are negligible. Otherwise, either a smaller or larger increment is possible.

A last dimension of the sectoral consequences of devaluation concerns the division of increased industry value added between industry-specific and mobile factors. If the supply of mobile factors (“labor”) is available at a fixed nominal reward, as in the case of a binding minimum wage, industry profits will increase by the full increment in value added. But because devaluation raises the cost of living and also tends to increase the demand for variable factors of production, there may be some upward adjustment in wages, whether determined by a competitive market, union contract negotiation, or legislation of a real minimum wage. On the other hand, devaluation—as opposed to depreciation of a floating rate—is often accompanied by an “incomes policy” intended to hold down wage adjustments, thus reducing the real wage and raising the proportion of increased industry value added accruing as profits.

Adjustments to Real Shocks

Although real shocks were hardly new in the 1970s, their interaction with a floating-rate system provided beleaguered policy analysts with consider-

able food for thought. As predicted, floating rates prevented the recurring exchange-market crises that no doubt would otherwise have accompanied the OPEC price shocks and ill-advised policy responses to them. And, although floating rates themselves did little to ease the adjustment of less-developed oil importers, most of which still peg their rates in any case, a largely private recycling process solved the immediate problem of inadequate balance-of-payments financing. Indeed, even critics of floating rates are usually quick to acknowledge that no alternative system could have survived the stormy 1970s. On the other hand, the actual adjustment process was quite different from that anticipated by most analysts, principally because of the unexpected ways in which OPEC surplus nations spent their vastly increased earnings.

According to the standard pre-1973 debate, flexible rates were supposed to insulate a country from external shocks, while fixed rates would allow the burden of internal shocks to be shared with trading partners. As already noted, the increased macroeconomic independence offered by flexible rates proved to be largely illusory. Moreover, the standard fixed vs. flexible arguments, based on conclusions from one-sector macroeconomic models, necessarily ignored the sector-specific impact of many shocks and thus obscured the sector-specific aspects of the resulting adjustment process. In response to this latter discovery, enterprising theorists have recently come forward with models of such hitherto uncelebrated maladies as "Dutch disease" (see, e.g., Corden, 1981, and Neary, 1982).

As in the analysis of exchange-rate changes, the crucial missing insight was that "the" tradables sector is in fact a set of heterogeneous industries. Furthermore, each has at any time a collection of industry-specific factors that can be shifted elsewhere only at considerable cost. Therefore, in a floating-rate system, the good fortune of one tradable-goods industry, whether technological progress, a mineral discovery, or a favorable price movement in the world market, can become bad news for other tradable-goods industries through two mechanisms: exchange-rate appreciation and the bidding up of rewards to factors mobile between sectors. The result is "Dutch disease" or "de-industrialization" or the problem of "lagging sectors," i.e., ones in which output falls and the rewards to industry-specific factors decline. Moreover, "the decline in the relative size of non-booming sectors is a necessary component of the economy's adjustment toward a higher level of income" (Neary, 1982, p. 20). Thus, a conflict arises between efficient resource allocation and certain other national objectives, such as developing

and maintaining an industrial sector of a certain size or maintaining the incomes of sector-specific factors.

All this assumes, of course, that the exchange rate moves in the direction suggested by the effect on the current-account balance, an effect that may be weak in practice. Furthermore, a national government wishing to avoid the consequences of appreciation can intervene in the foreign-exchange market, directly or indirectly, thus protecting other tradables sectors from injury. Corden (1981) has suggested that this is a primary motive for "exchange-rate protection." In such a case, or with a pegged rate that is not revised upward, the good news means reserve accumulation and attendant inflationary pressure rather than appreciation. Thus, the problem of adjustment can at least be postponed—for better or worse. It would be for better if the good news were temporary or reversible, because a stable rate could eliminate the unpleasant and perhaps undesirable squeeze on other tradables, although probably at the cost of some inflation.

While a sensible comparison of effects under the two regimes requires some specification of the way in which private and official agents form expectations, the outcomes may be quite similar in the long run. The reason is that a macroeconomic policy cannot eradicate the "supercompetitiveness" of one tradable-goods sector over the rest. Through internal mechanisms such as competition for inputs, the less-competitive sectors will still be squeezed. For example, it is noteworthy that the balance (in current dollars) of U.S. trade in "high-technology" goods has grown almost exponentially since 1960, while the trade balance in all other manufactures is roughly its mirror image. There is no apparent discontinuity in this pattern between the 1960s and 1970s, except for a higher variability in the 1970s that probably reflects underlying macroeconomic fluctuations and large jumps in real exchange rates. But for a government determined to slow the movement of resources out of uncompetitive tradables industries, there is still an obvious solution in the form of sectoral intervention or "industrial policy."

Causes and Consequences of Protection

Freer trade was one widely anticipated advantage of flexible exchange rates that failed to materialize. The conventional wisdom predicted that exchange-rate flexibility would facilitate trade liberalization (e.g., Baldwin, 1970, pp. 20-21, and Bergsten, 1972, pp. 8-9). Yet the post-1973 period has in fact been marked by the proliferation of new and subtle trade-

distorting measures. Furthermore, Bergsten and Williamson (1982) offer evidence that exchange-rate volatility has actually intensified the ever-present clamor for more and better protection from foreign competition.

According to the usual pre-1973 argument, exchange-rate flexibility would eliminate the perceived need for protection and in any case neutralize its benefits. This argument rested on errors concerning both the motives for protection and its consequences in a flexible-rate system. A floating rate obviates the perceived need for direct controls on foreign transactions only to the extent that protection is motivated by overall balance-of-payments considerations; it does not eliminate incentives for protection as a tool of macroeconomic stabilization or to achieve sector-specific goals. The implicit assumption that balance-of-payments considerations dominated trade-policy choices before 1973 may have stemmed from a confusion of the underlying motives for protection with the public rhetoric used to justify it.⁶ Since overall balance-of-payments considerations were in most instances merely a secondary motive for protection, the elimination of this motive has had only minor consequences for its use.

Sectoral Consequences of Protection

Gains achieved by protected domestic industries would be completely offset by resulting exchange-rate movements only under highly implausible circumstances. The notion that it is somehow irrational for industries to seek protection because it will be offset by currency appreciation (Friedman, 1981) is another example of the misleading conclusions that are drawn from macroeconomic models with insufficient "structure." In both industrialized and developing countries, real-world protection is a microeconomic, industry-specific phenomenon. Although broad coalitions may form to support or oppose major changes in national trade legislation, the level and type of actual protection are almost always determined on an industry-by-industry basis. Even the "across-the-board" tariff cuts achieved in the Kennedy Round of multilateral trade negotiations singled out numerous specific industries for exemptions from cuts. Too many recent macroeconomic analyses of protection are based on models in which only one good is produced domestically (e.g., Eichengreen, 1981). These models provide useful insights con-

⁶ Two indirect pieces of evidence for the dominance of other motives are levels of protection that vary markedly across industries and the use of quantitative restrictions with ambiguous balance-of-payments consequences. However, any positive balance-of-payments consequences can be viewed as reducing the political cost of providing protection to favored sectors.

cerning asset-market channels through which protection can have unanticipated and complex general-equilibrium consequences. But, because they necessarily omit the important sector-specific effects that are at the very heart of trade policy, they can provide only partial, and sometimes misleading, information concerning the real-world policies that presumably motivate their construction.

As soon as its industry-specific nature is recognized, the analysis of protection becomes identical to that of the industry-specific shocks discussed in the previous section. Protection of some tradables is likely to worsen the economic prospects of other, less-favored tradables. As before, whether the protection of some industries transforms others into lagging sectors depends in part on whether the exchange rate actually appreciates. In the case of protection, however, the outcome has an additional element of ambiguity, since some protective devices, such as "voluntary" export restraints, can cause a deterioration rather than an improvement in the trade balance and hence a depreciation rather than an appreciation (to the extent that the trade balance does influence the exchange rate); see Meade's classic analysis (1951, Chap. XXI) and Richardson's (1982) treatment of "modern" commercial policy. Adequate analysis of industry-specific effects requires a model with at least two sectors producing tradable outputs.

Identification of sectoral consequences also helps to clarify the underlying rational motives for apparently irrational policies. One particularly interesting example is the prevalence of overvalued exchange rates among developing countries, along with extensive trade and credit controls. Taken together as a coherent policy package, this adds up to a hefty subsidy to a preferred sector, typically import-competing industrial production. While trade barriers protect domestic markets, an overvalued exchange rate allows required capital equipment and intermediate inputs to be purchased at bargain prices, and capital-export prohibitions facilitate access to low-cost credit. The resulting disadvantage to producers of other tradables is one important reason for the much-remarked failure of third-world agriculture to achieve the production levels suggested by its obvious comparative advantage. Like all generalizations regarding developing countries, this one clearly disregards many important national differences. However, the pattern seems to fit a large number of countries.

Volatility and Protectionism

The volatility of the dollar since 1973 has resulted in prolonged departures from purchasing power parity and large exogenous swings in the interna-

tional competitiveness of U.S. producers of tradable goods. The unexpected increase in protectionism over the same period raises the question whether the current system has actually been an important *cause* of increased protectionism.

Bergsten and Williamson (1982) have recently suggested that there is a "ratchet" effect of exchange-rate fluctuations on the average level of protection.⁷ While prolonged overvaluation of the dollar gives rise to new arguments for all manner of sectoral protection, as in 1981 and 1982, any new protection is likely to persist long after the overvaluation has disappeared. Moreover, they argue, even undervaluation might add to protectionist pressures by attracting resources into industries with secularly declining international competitiveness, or at least slowing their exit. When the inappropriately low currency value finally moves upward again, protection will be demanded.

While this hypothesis is intuitively appealing and seems consistent with the recent protectionist fever in the U.S. Congress, there is again a problem of distinguishing appropriately between the underlying motives for protection and its public justification. The quest for favorable government intervention (in all forms, including, but certainly not limited to, trade policies) is a fact of economic life. As long as governments are responsive to demands for sectoral intervention, efforts to obtain, retain, and increase such benefits represent a capital investment comparable to research and development, advertising, and other intangibles that have a favorable impact on profits. (The analogy is imperfect, however, because investment in obtaining favorable government intervention is usually undertaken by a trade association or labor union and therefore has a "free rider" aspect that does not occur with most advertising or R & D.) However, managers, union officials, and the public do tend to view asymmetrically profits vs. losses and overtime vs. layoffs. Therefore, both the industry "demand" for government intervention and its politically determined "supply" may be expected to increase when national unemployment is high, as in 1981-82. Furthermore, while protection is only one possible type of favorable legislative or administrative action among many (including government procure-

⁷ Bergsten and Williamson call for policies to ensure that the value of the dollar does not stray too far from its "fundamental equilibrium rate," defined by analogy to the Bretton Woods criterion of fundamental disequilibrium for a parity change and distinguished from day-to-day market equilibrium. But while uncontroversial arguments in favor of greater stability constitute much of the paper, there is no indication of how the authors' proposed solution (which amounts to a wide-band peg and would thus appear to share many of the flaws that led to the end of the Bretton Woods system) could be successfully implemented.

ment, regulatory or tax relief, technical assistance, and subsidized credit), the political cost of intervention in this particular form is probably less when the exchange rate is widely acknowledged to be overvalued, as in 1981-82. For these political-economic reasons, it is plausible to expect industry-specific intervention to increase when national unemployment is high and to take the specific form of new trade barriers when the dollar is overvalued.

Yet the actual cases cited to support this link between protection and overvaluation (e.g., textiles, steel, sugar, shoes) are ones with chronic competitiveness problems, not fundamentally healthy industries put temporarily into the red by an overvalued dollar. For some, protection from imports is a national vice extending back into the 1950s. This suggests that exchange-rate overvaluation can provide the politically expedient occasion for new protection of declining industries, interacting with other determinants of increased protectionism, without being the fundamental cause. It must also be noted that the empirical evidence for the persistence of sectoral intervention seems to be weak. Because of strong domestic lobbies against, as well as in favor of, protection, import relief provides only a brief respite for many industries from the consequences of shifting comparative advantage.

Concluding Remarks

Much of the pre-1973 debate on international monetary reform proved to be irrelevant, for two reasons. First, international political realities precluded the "choice" or "design" of a new system. Perhaps Bretton Woods was a unique phenomenon, at least for modern times. But, more important, the post-1973 system of flexible exchange rates has functioned in ways that are markedly different from the predictions of most analysts on either side of the debate.

In many regards, the academic arguments in favor of increased flexibility never improved on Friedman's pioneering (1953) case. Yet Friedman, as well as most others, erred in their most fundamental prediction, that flexible rates would be stable if national monetary policies were stable. We live in times of too much daily economic "news" from other sources to avoid large fluctuations in market-determined exchange rates. As Mussa aptly remarked, "The smoothly adjusting exchange rate is, like the unicorn, a mythical beast" (1979, p. 9). Moreover, while these fluctuations probably

do imply significant real costs to those engaged in international commerce, their effects on trade and investment flows are very different than anticipated. In particular, day-to-day movements in currency values offer an independent motive for international transactions, as a means of diversifying exchange risk.

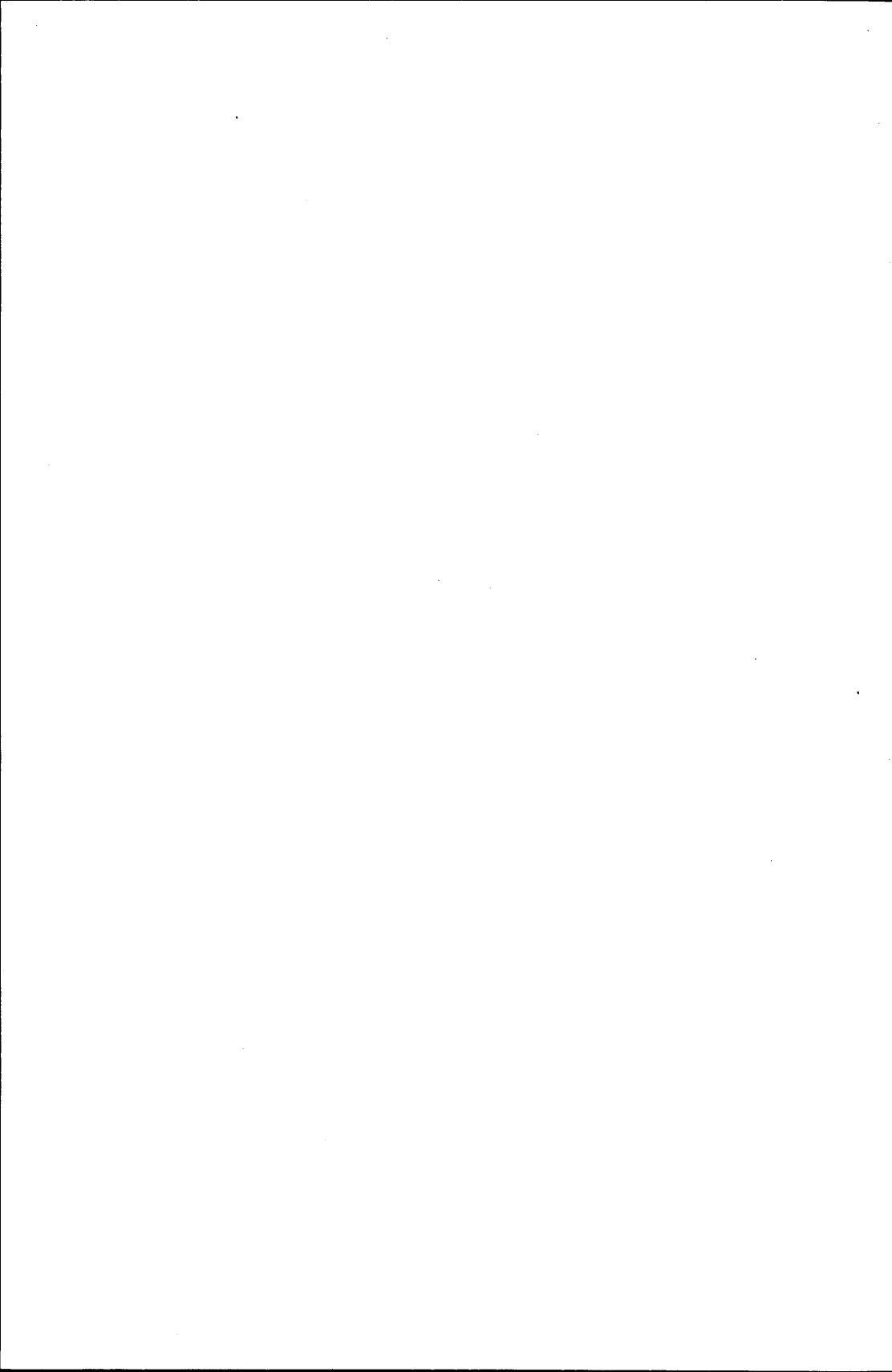
If there is a single salient lesson to be learned by scrutinizing academic research on exchange rates in the light of post-1973 events in the international monetary system, it is the great mischief that can come from paying insufficient attention to economic structure in macroeconomic analysis. While theorists necessarily strip reality down to a bare minimum of basic relationships, the same basics are not appropriate for all questions. For the large number of policy issues arising from the interactions of individual industries within a single economy, macroeconomic models with only one aggregate tradable can provide at best a partial understanding and sometimes a seriously flawed account.

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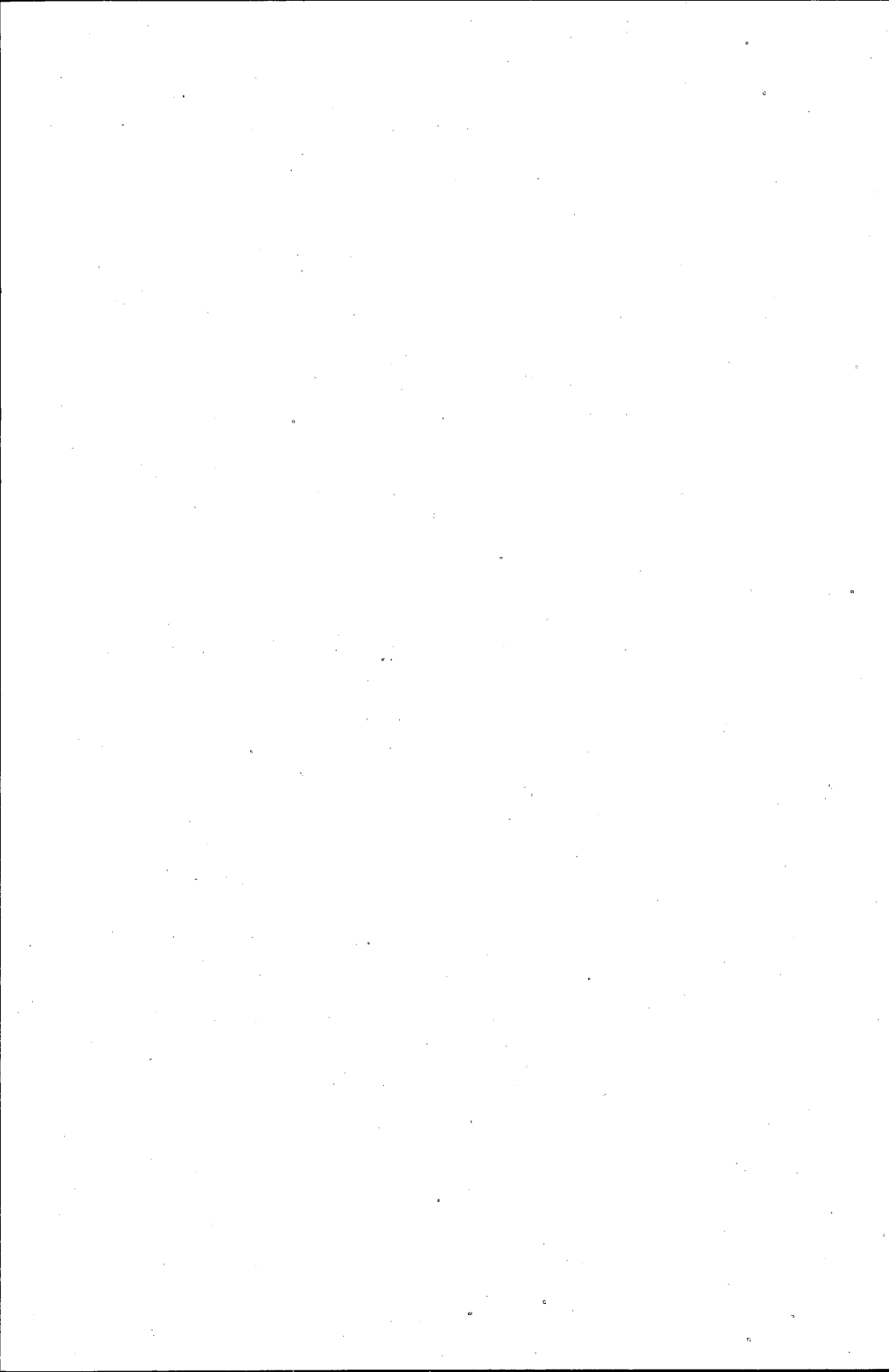
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