The Evolution of the Flexible Exchange Rate Debate

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The flexible exchange rate period officially began in 1973 with the complete breakdown of the Bretton Woods agreements. It ushered in a period of intense financial volatility, not seen in U.S. markets since the Great Depression. The degree of exchange rate variability has been associated with high absolute levels of, and great relative movement in, other economic parameters (such as the inflation rate and interest rates), and it has been greater than academics, policy-makers, or investors anticipated.

Some have stated that this volatility in foreign exchange markets, though unusual, is no greater than that experienced daily in other well-organized markets, such as the commodity or equity markets. Others have argued that this volatility is excessive, imposing high real economic costs which reduce real international trade. Deciding whether or not the benefits of the flexible exchange rate system have outweighed the advantages of the old fixed exchange rate system depends both on the criteria chosen for the assessment and on personal judgment. But the fact remains that the abandonment of Bretton Woods and its replacement with a flexible exchange rate system is a major element in understanding or analyzing the present state of the world's economies.

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This chapter attempts to isolate in which direction—and why—the literature has developed, and to focus on where it still go. It is divided into four parts. First, the international financial situation is briefly reviewed. Second, a discussion of the various schools of thought that have developed to explain how a flexible exchange system should work (or why the present flexible exchange regime has worked as it has) is presented. Third, the recent intellectual and market responses to the experiences of floating exchange rates from economists, policy-makers and investors are considered. And fourth, implications for future analysis are drawn. These implications, given recent evidence, are that traditional explanations for exchange rate determination are clearly inadequate. No one model has forecast well. The focus of the literature is shifting toward understanding the effects and implications of risk and volatility. Furthermore, research emphasizing risk management rather than forecasting is becoming increasingly important.

THE INTERNATIONAL FINANCIAL SITUATION

The selection of the fixed exchange rate regime in 1944 by the signatories of the Bretton Woods agreement may be viewed as a belief in achieving an orderly international economy through exchange rate stability. Countries were to maintain a fixed rate of exchange between their currencies and the U.S. dollar, charging this rate only when faced with a fundamental disequilibrium. In turn, the U.S. dollar's price was fixed in terms of gold, ensuring noninflationary monetary policies.

After the United States deviated the dollar twice and President Nixon closed the gold window, the Smithsonian Agreements of 1973 put the world on a flexible exchange rate system, whereby no currency had to maintain any fixed value in terms of the U.S. dollar, other currencies or gold. In other words, the contract between the United States and each and every holder of a U.S. dollar that ensured the price stability of this currency was declared void, and a decision was made not to replace it with any other contract.

The selection of the floating rate system by the participants at the Smithsonian meetings may be viewed as a belief in achieving an orderly international economy through increasing market information, by defacing one set of prices (that is, exchange rates). The results of this choice are still being analyzed.

First, exchange rate variability is calling into question whether exchange rates are a good insulator against exogenous economic shocks.
And, the flexible exchange rate system has had only very limited success in allowing countries to maintain divergent inflation rates and productivity growth rates. It has proved impossible to resist major changes in world inflation and growth trends.

Second, not only has exchange rate variability been greater than anticipated, but the movement has often been in the “wrong direction,” suggesting traditional theories may have been wrong. That is, the exchange rate has deviated substantially from maintaining purchasing-power parity at least over the short term, thus disappointing the expectation that exchange rates would move quickly and smoothly to restore equilibrium, after changes in payments or divergences in growth or prices. On the other hand, the present exchange rate system does allow immediate adjustments to economic imbalances without a waiting for a full-blown exchange rate crisis, as was sometimes the case under fixed exchange rates.

Third, the relationship between current account imbalances (surpluses or deficits) and exchange rate changes (appreciation or depreciation) has not been the strong, corrective one anticipated by some economists. Indeed, current account explanations of exchange rate changes have often pointed in the wrong direction.

Fourth, exchange rate swings based upon demand for a currency due to the safe-haven effect has been a factor not anticipated. This factor, though logical is a rational model that takes a broad perspective on risk-management behavior, may be frustrating to policy-makers, who either benefit or lose as perception of relative long-term financial risks change.

Some have argued that the degree of excessiveness in the movements of exchange rates should be considered in light of other events, such as the oil crises. They suggest that real or monetary shocks such as these may have worsened exchange rate volatility, or that the disruption or inefficiency caused by these shocks may have been even worse under a different type of exchange rate regime. Others argue the experiences of the last decade dictates that a new system is needed. The debate is vociferous and heated, and neutral fence sitters have left the field of intellectual combat, but the epitaph of the flexible system is yet to be written.

THE ECONOMIC LITERATURE ON FLEXIBLE EXCHANGE RATES

Two distinct sets of the literature have developed to explain the mechanics of flexible exchange rates. Both sets had started during the Bretton Woods
period, and some would argue that they are merely the international versions of the monetarist-Keynesian debate. Monetary approaches to exchange rates had their roots in the venerable theory of purchasing-power parity (PPP), while the Keynesian strand was related to the elasticities approach to explaining trade balances.

It is noteworthy that both bodies of thought supported flexible exchange rates in the last days of Bretton Woods. The monetarist or PPP School, for the most part, believed that PPP would lead to stable exchange rates because arbitrage would ensure a rapid but smooth adjustment to foreign and domestic price changes. Furthermore, nominal exchange rate adjustment would lead to independent domestic monetary policies, freed from the control of gold. A critical price control—fixed exchange rates—would be ended.3

The elasticities group agreed with the proponents of PPP that exchange rate changes would be few, because their approach suggested that minor adjustments in exchange rates would cause large swings in exports and imports, leading quickly to a payments balance. And once payments were balanced, no change of exchange rates need occur.4

Today, the different groups have explained the unanticipated volatility of exchange rates through refinements in their models. However, there is no consensus yet on whether the present exchange rate system should be kept, modified, or discarded.

Historical Approaches

Elasticities Approach

The elasticities approach was originally developed to explain how the balance of trade between two countries would change in response to a currency devaluation or revaluation under a fixed exchange rate regime.

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1 One of the most vocal proponents of flexible rates, Milton Friedman, "The Case for Flexible Exchange Rates," in Essays in Positive Economics, ed. Milton Friedman (Chicago: University of Chicago Press, 1953), pp. 157-203, sets the stage for the later monetarist support of floating exchange rates. Out of the early monetarist tradition, another group closely associated with the monetarists on many issues, following Robert Mundell and Harry Johnson (though he was an early supporter of flexible rates), would become supporters of fixed exchange rates. Both groups depended on PPP as a basis for arguments. Both would draw different conclusions about the correct international financial system, however.
As modified for the floating rate regime, this approach analyzed changes in
the exchange rate resulting from changes in the import or export demand
for goods and services.

This approach views the exchange rate as the price of foreign
exchange that maintains balance of payments equilibrium. The exchange
rate moves in response to changes in the demand for imports or exports;
the degree to which it moves depends on the sensitivity (or elasticities) of
import and export demand to price changes. An increase in domestic
demand for imports will cause a trade imbalance, which in turn implies an
excess demand for foreign exchange. The home currency must depreciate
vis-a-vis the foreign currency to eliminate the deficit. This rise in the
exchange rate (measured in units of foreign currency per unit of domestic
currency) makes the relative price of imports at home rise, while the
relative price of exports falls. If import and export demand is price
sensitive (that is, if the price elasticities of import and export demand are
large), then small changes in the exchange rate will cause relative import
and export price shifts that will greatly affect the level of demand for
imports and exports, and thus quickly bring the balance of payments back
into equilibrium.

As Bretton Woods ended, the elasticities approach supporters argued
that price elasticities were sufficiently large to ensure that minor exchange
rate adjustment would stabilize the balance of payments. Absorptionist
theories lend support to the elasticities approach to payments deter-
mination; and, while both groups admitted that exchange rate changes
could be large, massive changes in both exchange rates and payments
balances were certainly not foreseen.

Figure 7.1 illustrates the pattern exhibited by the current account
balance of the United States and a trade-weighted U.S. dollar index.
Current account imbalance has been more common in the past decade than
balance. What is more, there have been long periods when the relationship
between these two economic variables is exactly opposite to what the
Elasticities School predicted; that is, there have been periods where
continuing U.S. surpluses (deficits) are associated with a depreciating
(appreciating) U.S. dollar.

One characteristic of this approach that may partly explain its inability
to foresee big swings in exchange rates is its limited treatment of capital
flows; that is, the trade balance between two countries is assumed to drive
the total balance of payments. Capital flows are passive.

Although the elasticity approach literature still enjoys a following, its
impact on modern analysis has been most apparent in how it is used to
explain trade flows rather than exchange rates. And, it has just to offer in
analyzing exchange rates in a world of highly integrated capital markets.
FIGURE 7.1 Weighted Average U.S. Dollar Index and Current Account Balance (1967-83).

Note: The index of the weighted average exchange value of the U.S. dollar is calculated against the currencies of the other Group of Ten countries plus Switzerland. Weights are 1972-76 global trade of each of the 10 countries.
FIGURE 7.2 United States versus German Inflation.

Purchasing-power Parity

Purchasing power parity (PPP), sometimes presented as the law of one price, stipulates that the purchasing power of home currency in the domestic economy must be equal to the purchasing power of home currency abroad, or else arbitrage will occur until parity does exist. The absolute version of PPP regards the exchange rate as the ratio of two countries' general price levels (when the price levels are in terms of the two countries' respective currencies). The relative version of PPP requires, less stringently, that the percentage change in the exchange rate in a certain period equals the difference between the percentage change in the two countries' price levels during this period. The more realistic version thereby argues the obvious: economic agents will act to take advantage of arbitrage opportunities whenever and wherever available.

The actual efficacy of PPP in explaining exchange rate movements based on price level differences between countries has been mixed (see Figure 7.2). For example, differences in price levels do not always explain the short-term movement of exchange rates. On the other hand, PPP has
been more powerful in explaining exchange rate behavior over the long run. Since PPP can be discussed as both a monetary and a goods phenomenon, discrepancies between the exchange rate changes predicted by PPP and those that actually occur may be explained to some extent by differences in the time it takes the financial asset market and the markets for all goods and services to clear. Moreover, if arbitrage is available for traded goods only but sets in motion relative price changes between nontraded goods, then apparent, but only intertemporal, discrepancies occur.

One group observing the frequent discrepancy between exchange rate movements and changes in divergences in national price levels suggested that PPP no longer works. This view is based primarily on empirical work in which the estimated coefficients on the price variable in the PPP equation are statistically different from their hypothesized value of unity. Also, the equations often produce very bad fits of the data with poor summary statistics. Alternatively, another group argues that the empirical tests are asking too much. They suggest that the essence of PPP is that arbitragable price differences are eventually arbitraged out of existence. There may well be taxes, tariffs, risks of fake, and financing, and so forth, that prevent the PPP equation from explaining actual data; and, yet, so arbitrable price differences exist. PPP works if no one can profit from existing price differences. Thus, the view of PPP originally used in monetary models was too simplistic; these economists argued that this view of PPP was essentially alive with respect to exchange rate behavior, but essentially correct with respect to the behavior of price arbitrageurs.*

Modern Approaches

MBOP, Currency Substitution, and Sticky Prices

The Simple Monetary Model The monetary approach strand of literature was inconsistent with many of the views expounded by monetarists on

*Interestingly enough, both groups provided a model of exchange rate determination that was not fully available at the time of traditional monetarist theory, since it was essentially a theory concerned about closed, not open, economies. (A policy perspective, of course, claims the economy with respect to the relationship of money and GDP over the long run, and not whatever exchange one can.) With no theory of the open economy, however, a rational model of exchange rate behavior was generated from the Monetary Approach to the Balance of Payments (MBOP) School. See Part 1 of this book for an extended discussion of this approach.
fundamental issues such as the causality of money under the condition of fixed exchange rates. With flexible rates, many of these inconsistencies would be shoved aside. The MBOP literature yielded the basic monetary model of exchange rate adjustment that many incorrectly describe as the "monetarist model." In fact, it is the simple fixed rate MBOP model modified for flexible rates. In this "flexible rate MBOP model," PPP, Fisher interest rate parity, and a stable money demand function were necessary. Empirical results have been mixed, and continue to be so. For all of its robustness, the MBOP basic model was not complete enough to explain many of the seemingly incongruous machinations of the exchange market, particularly in the short run.

Deviations of ex post real exchange rates were large. The simple MBOP model was not sufficiently robust to account for these deviations. This was a dynamic problem seemingly unsolvable by the simple MBOP model. Utilizing expectations, later versions would somewhat redress this problem. Albeit not very useful in explaining the short-run dynamics of exchange markets, the basic monetary model is still the basis for most forecasting models now used. Just as importantly, it still provides the starting point for any policy-maker who has to wrestle with the implications of government actions on exchange markets. Some of the lessons derived from working with derivatives of this model remain in good stead and have become accepted doctrine. For example:

"See Thomas M. Humphrey and Robert E. Keleher, The Monetary Approach to the Balance of Payments, Exchange Rates, and World Inflation (New York: Praeger Publishers, 1982), and Chapter 2 of this book for a complete discussion of this point, since it is key to understanding the policy debates now taking place. In essence, the MBOP literature showed that causality flowed from income to money under a fixed exchange rate regime for all countries except the reserve currency country, quite the opposite of what was proposed by monetarists."

"The early monetary models, as is discussed, were made more complicated. They were changed to allow for sticky prices, temporal differences in capital and goods markets, currency substitution, etc. Considering the plethora of the literature that was to follow the early naive monetary models, two observations are worth noting. First, once rational expectations doctrine is applied to the naive model it takes many of the characteristics of other more cumbersome asset-based models. Second, the mass of literature generated on the flexible exchange rate literature is, for the most part, in defense of, or an attachment to, or simply an extension of this naive model. The competing theory (elasticities-absorption theory) of exchange rate determination is considered of little challenge to the basic monetary (not only monetarist) model as an explanation of flexible exchange rate determination."
Real income growth is associated with a net appreciation in the value of a country's currency; 
- Interest rates that change because of price expectations are negatively correlated with an appreciating exchange rate; but,
- Interest rate changes which are policy-induced to decrease future domestic credit demand are positively correlated with an appreciating exchange rate;
- The appropriate measure of money, is both definitional and temporal senses, can vary across countries; and
- A thorough understanding of the reaction function of the monetary authority is necessary if the independent variables are to be utilized correctly for anything except the longest-run forecasting exercise.

**Currency Substitution** Many of the earliest attacks on the validity of the basic monetary model came from various international monetary economists who felt a basic assumption of the monetary model was incorrect. Namely, on the margin multicycle portfolios are extremely important and assuming that residents hold only their own currency is too restrictive. Considering only the issues behind—and not necessarily the implications of—the argument that currencies are substitutable, this omissions of the literature appeared esoteric and was difficult to support empirically.

The implications of the monetary model assumption of nonsubstitutability of currencies were important, however. If currencies are substitutable, then several forces could be at work:

- The empirical assessment and the usefulness of the basic monetary approach (with independent monetary policy) was shown to be fallacious for certain currency relationships; that is, Canada and the United States;
- Extremely large swings in foreign exchange rates could occur if the degree of substitutability between two countries' currencies changed;
- A relatively stable international financial system could only exist if the independent governments' monetary policies converged and if the policies were believed to be inviolate;
- The concept of independent monetary policy was, for practical (if not theoretical) purposes, invalid; that is, an economy could not carry out a monetary policy distinct from other countries, without feeling the effects of the foreign policies on its own economy; and
- The theory helped explain seemingly inexplicable bilateral exchange rate changes between two currencies resulting from third-party actions.

Currency substitution literature continues to play a vigorous role in
explaining why foreign exchange markets are so volatile and, by the same token, it continues to restrain those policy-makers who search for the door to independence. The illusion of interdependence was the major one, and due to it, currency substitution was one of the first methodologies to point out the flaws underlying the traditional passion d'être for a flexible rate regime. 9

Overheating: Sticky Prices and Early Portfolio Balance Models During the mid-1970s, the apparent failures of restrictive PPP models to explain observable events led to an alternative development in the literature which, in some ways, revived many of the tenets of earlier Keynesian models. These sticky price models attempted to explain the dynamics of exchange rate behavior by focusing on variables other than simple relative money demands. Current account imbalances were revived as explanations of apparent deviations in exchange rates from long-term PPP. 10 Price rigidity was the key assumption. But even more critical were the implications of differentiation of capital and trade flows, suggesting they responded to different stimuli. These models eventually gave way to portfolio balance models that could take into account investor preferences, a fundamental argument missing from these earlier models. 11

The portfolio balance models are, in many ways, the natural evolution of the overheating models, after the failure of the latter to explain much of the movement in rates during the late 1970s. Visible and virtual crises became the staple of the mid-1970s. But the October 6, 1979, monetary policy shock, and the inexplicable strength of the dollar in the early 1980s were unanticipated ex ante and not explained ex post by the overheating models, as well as by most new portfolio balance models.

Neither model appears to have yet yielded sufficiently robust empirical results to validate many of the policy implications of these models, such as exchange market intervention, which depends on segmented markets. The idea of intervention is somewhat disquieting to a market that has experienced the daily exchange rate variability of 1983 and early 1985. Coordinated intervention, such as that experienced in late 1984 and early 1985, can hardly be said to have succeeded in "calming" the market.

RESPONSES TO THE EXPERIENCE OF FLEXIBLE EXCHANGE RATES

The domestic financial systems that were in existence prior to 1973 depended upon the continuation of a fixed exchange rate system, low inflation and financial order. Abandoning Bretton Woods led to volatility and uncertainty in exchange rates and inflation. Domestic markets had to adjust, but of even greater immediate importance was the need to link existing domestic markets, facing different risks, in new ways.

A major bridge has resulted from the growth of the Eurocurrency market. In this new world of increasingly risky exchange rate exposures, individuals and banks needed instruments that would allow exchange of these risks in an efficient manner. This new financial risk caused by the flexible exchange rate system and heightened by the commodity price boom with its wealth transfer implications, particularly to the Middle East, led to a massive growth in the Eurocurrency as a vehicle to transform and manage financial risk.

Simultaneously, the current futures markets provided risk mitigation products to groups who did not have cheap access to the interbank foreign exchange forward market. Currency futures became the vehicle most utilized by small corporations to separate currency liquidity (transaction demand) from currency price risk. Following the October, 1979, policy shock from the Federal Reserve, interest rate futures followed the rapid growth rate set by their cousins, currency futures, during the mid-to-late 1970s. By 1984, some estimates that more than three trillion dollars of interest rate futures were traded.

With such a massive market for risk intermediation, interest rate swaps—an interest rate forward market similar to the interbank currency

*In fact, this market came into existence in order to circumvent various controls that the United States had instituted in the late 1960s or earlier. These controls included banking regulations, such as deposit rate ceilings and noninterest bearing reserve requirements, and tax regulations. Some of these controls had as their primary goal an increase in the U.S. dollar over its balance of payments while others were intended to allow the United States to earn a revenue from the use of the dollar as the world’s currency vehicle. After this market was created, it did not have much of a role to play until flexible exchange rates and oil shocks combined to give it new life. The regulations that existed in many domestic financial markets, including those in the United States, made those markets less efficient in the intermediation of this newfound international financial risk. See Tedial Patern, “Controlling the Euromarkets: A Policy Perspective,” Columbia Journal of World Business (Fall, 1979): 29-31.*
market—began to develop. Currency swaps and currency options are now providing new avenues to solve the problems created by financial uncertainty. These market responses have been critical to the ability of the financial system to continue to function in the face of the new uncertainties generated during the 1970s and early 1980s.

Individuals, financial institutions, corporations, and governments all have attempted to diversify and manage portfolios of currencies in ways that were never before necessary. The markets have been created to help them by providing less expensive ways to hedge risk. And, no doubt, this has been important in shaping the academic literature as well. We feel a new intellectual response has begun to develop as a result. First, more simple versions of the portfolio balance models appear to have come to the forefront of the literature, as risk became paramount to any foreign exchange discussion. These models are more similar to those used in analyzing the U.S. stock market than they are to the older, more cumbersome portfolio balance models of the mid-1970s. Second, there has been a return to the basic tenets of the MBOP model, but with an allowance of nonzero substitutability of currencies as well as nonperfect substitutability of other assets goods, while defining PPP conditions in expectations form with an understanding of the risks involved. The first direction is consistent with the second. A model of how various economic factors affect markets is important in determining the implications of news on individuals’ portfolios.

**IMPLICATIONS FOR THE LITERATURE**

As new markets are developed to allow risk to be priced efficiently, and as individuals, corporations, and governments become more aware of the portfolio implications of foreign exchange risk, the foreign exchange market behaves more and more like equity and commodity markets. Volatility is and will continue to be the norm in these types of markets. This fact will likely reinforce the dichotomy between short-run and long-run analysis now taking place in the literature. Asset-pricing models,

efficient markets, and portfolio balance theory appear to be the issues in the short-run analysis of exchange rates, though the information most apropos to these models is that derived from longer-term PPP model derivatives.

Emphasis on two directions in the academic literature is anticipated. First, much of the work in short-run modeling will continue to adopt finance literature approaches, as the foreign exchange literature comes to grips with risk. Second, the long-run literature will likely begin to return to the basics embodied in the simple MBOP model, adjusted for currency substitution.

We argue that the link between these seemingly different directions of analysis is the substitutability of monetary wealth. Acceptance of currency substitution provides the integration of risk into the basic MBOP model. Expectations and risk assessment are thus integrated fully into the MBOP model while the underlying tenets of MBOP literature provide the key to understanding what long-term factors are important to concentrate upon.

But, why two directions? Market volatility has set in motion economic incentives for financial institutions to create new instruments to deal with new risks. These new products are simply new ways to manage the risk created by volatile markets. And, a premium will be paid to individuals who can understand, create, trade, and utilize these new risk reduction instruments. For this reason—and, more fundamentally, for the reason that economists have been poor forecasters of foreign exchange rates—we believe the next academic response to exchange rate volatility will be more concentrated in managing exchange rate risk and the attendant reasons for the risks involved.

Greater concentration on the basics should once again dominate longer-term analysis, however. Market participants, will require guidelines to evaluate properly the implied risk characteristics of any new information. Longer-term insight is also needed by policy-makers, who still must deal with the potential liability that the exchange rate system itself imposes on participants. Guides about long-run consequences of policies, not provided by the risk management literature, will continue to be demanded. Heightened financial market risk makes the cost of ignoring information too great for all participants. Better understanding of what information is critical and what is unimportant to exchange rates becomes even more valuable.

Finally, it strikes us that as the emphasis shifts from forecasting to risk management, the scene is set for a revisit to the question of what type of exchange rate system is most desirable. Much of the work of the 1980s will concentrate, once again, on the two extremes, fixed or floating. Less emphasis will be placed on what is wrong with floating, and more will be
NOTES


9. See Chapters 11, 12, 13, 14, 15, and 16 of this book.