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THE CASE FOR FLOATING EXCHANGE RATES AND THE TURMOIL IN
THE MARKETS FOR CURRENCIES AND ASSETS

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The move from the Bretton Woods system of adjustable parities to the floating currency arrangement in the early 1970s was facilitated by the arguments advanced by a group of distinguished economists in the 1950s and the 1960s. They favored a floating currency arrangement because they wanted central banks to have monetary independence and they believed that deviations of national prices from prices in global markets would be smaller if currencies were floating than if they were pegged. Their claims are the ‘monetary constitution’ for floating currencies. One of their principal claims was that changes in currency values would be stable.

The last thirty-plus years have been the most tumultuous in monetary history. There have been four waves of financial crisis; each wave involved the failure of a large number of banks in several countries. The first wave involved Mexico, Brazil, and more than ten other developing countries in 1982. The second wave centered on Japan and three of the Nordic countries in the early 1990s. The Asian Financial Crisis that began in mid-1997 was the third wave; the banks in most countries in the region—although not in Singapore and Hong Kong—failed, as did Long Term Capital Management, the largest U.S. hedge fund. The fourth wave began in 2007 and has involved the United States, Britain, Iceland, Ireland, and Spain, as well as Greece and Portugal. Some of the largest financial institutions in the United States, Britain, and Ireland tanked or needed a savior. The three Icelandic banks were taken over by the government. Greece and Portugal are on life support from the European Central Bank.

Each of these waves of crisis was preceded by a wave of credit binges when the indebtedness of groups of borrowers in these countries—in some cases the governments, usually real estate investors—increased at rates that often were in the range of twenty to thirty percent a year for three or more years. The combined external indebtedness of Mexico and the other developing countries was \$125 billion at the end of 1972 and \$800 billion ten years later. U.S. mortgage indebtedness increased from \$11 trillion in 2002 to peak at \$21 trillion in 2007.

The rapid growth of credit usually led to rapid increases in asset prices, and most often the prices of real estate; stock prices often increased at the same time. Real estate prices and stock prices in Japan increased by a factor of five to six in the 1980s—an annual rate that approached thirty percent. Real estate prices doubled between 2002 and 2006 in the sixteen U.S. states that account for fifty percent of U.S. GDP. Stock prices in Iceland increased by sixty percent a year between 2002 and 2008.

The range of movement in the market values of currencies has been very large and the scope of overshooting and undershooting—the deviations of the market rates from the long run average values—has been much larger than when currencies were pegged. The pattern is that the

currencies of the countries that experience credit binges appreciate, and by much more than the difference between the domestic and foreign inflation rates. The currencies of the countries that experience financial crises depreciate; the crisis often have been induced by the sharp declines in the values of currencies. The transition from the credit binge to the crisis often has been associated with the rapid change from overshooting or overvaluation to undershooting or undervaluation.

The revenues of the firms that trade currencies and securities have surged. In 1980, eighty to ninety percent of the revenues of the major investment banks were from traditional activities like underwriting, mergers and acquisitions, and financial advisory work, and ten to twenty percent were from trading. Now revenues from trading account for eighty to ninety percent of total revenues. These firms' revenues from trading have soared, while revenues from their traditional activities are more or less unchanged as a share of GDP. (Changes in regulations like those introduced in the Dodd-Frank act have required firms to shed some trading activities—but presumably the trading revenues will be realized by new firms managed by former employees of the firms that have been required to shed trading activities.)

This paper focuses on the causes of the turmoil in the prices of currencies and securities, including those related to the financing of real estate. Sharp changes in the prices of securities and currencies are responses to shocks, which might be structural (including changes in the price of petroleum and bad harvests) or monetary (such as changes in the central bank discount rates, the rates of money supply growth, and investor demand for foreign currencies and securities).

The theme of this paper is that the shocks that have led to the binges in the credit supplies in these countries have involved sharp increases in the cross-border movement of money, and in the demand for the IOUs of various borrowers in these countries. The increase in demand has led to increases in the prices of these currencies and in the prices of securities in these countries, which in turn has led to economic booms and euphoria. The rate of increase in the indebtedness has been much too rapid to be sustained, and the inevitable decline in this rate of increase as triggered the depreciation of the currencies

This paper reconciles these empirical observations about the changes in the prices of currencies with the claims about the advantages of floating or flexible currencies in the 1950s and 1960s.

I. THE CASE FOR FLOATING CURRENCIES REDUX

The move to a floating currency arrangement in the early 1970s occurred because the Bretton Woods system of adjustable parities was not tenable as long as national inflation rates were higher than two percent and the maximum inflation rate acceptable to the Germans was below the minimum inflation rate that the Americans preferred. The reliance on floating currencies since the early 1970s has differed from most earlier episodes with floating currencies, since no government has made a commitment to return to a parity as the British did after the

Napoleonic Wars in the 1810s and as the Americans did after the Civil War in the 1860s—or as the British did in the early 1920s.

Many individuals believed a floating currency arrangement would be attractive because of the arguments advanced by Milton Friedman, Gottfried Habeler, Harry Johnson, Egon Sohmen, and other economists in the 1950s and 1960s. (Hereafter the term “proponents” refers to their arguments.) The proponents believed that the market for currencies was not different from the markets for stocks, government bonds, pork bellies, petroleum, and other commodities, and that competitive forces should be allowed to determine the values of currencies, just as they determined the prices of various securities and commodities. Friedman observed that “bad things happen when governments engage in price-fixing.” The proponents asked—rhetorically—whether it was preferable to allow the values of the currencies to adjust to shocks and imbalances or instead whether the prices and income and employment in the countries with the deficits and the surpluses should adjust so that the established parities could be maintained. The implication was that the deviations from the targets for the price level and the employment levels would be smaller if currencies were allowed to depreciate and appreciate in response to various shocks.

The floating currency arrangement differs from the gold standard and the Bretton Woods system of adjustable parities in that it has no formal “constitution”. The constitution of the gold standard centered on the requirement that banks maintain the convertibility of their IOUs into gold and follow the folkloric “rules of the game,” a set of normative statements that changes in the money supply in each country would follow from gold inflows and gold outflows and positive statements that the flow of gold from a country would lead to a decline in its price level and conversely. The constitution for the Bretton Woods system was the Articles of Agreement of the International Monetary Fund, which specified the rights and commitments of the member countries, and the procedures for changing the parities for their currencies and for obtaining credit from and extending credit to the IMF.

The closest counterpart to a monetary constitution for the floating currency arrangement is a set of articles from the 1950s and 1960s that elaborate the normative advantages of such an arrangement and the positive advantages of changes in the values of currencies in response to different types of shocks. Their normative statements identified two primary objectives; one was that it was desirable to minimize the barriers or frictions at national borders such as tariffs, quotas, and exchange controls that would distort the relationship between prices in domestic markets and prices in the global market. Distortions also would occur if currencies became overvalued or undervalued. The second normative statement was that central banks should have the freedom to adopt monetary policies that would help them achieve price level stability or some other objective; the proponents did not want central banks to be constrained from adopting a more expansive monetary policy because of their concern that their payments deficits would increase. And they did not want central banks to be obliged to buy foreign currencies to prevent their own currencies from appreciating.

Friedman noted that the economists who believed that money was important preferred a floating currency arrangement, while the economists who did not believe that money was important preferred fixed rates. Not all of those who favored floating rates were monetarists, but virtually all of the monetarists were in the group of proponents.

The key positive statement advanced by the proponents was that changes in currency values would be stable in response to various shocks, and that the changes in employment and prices in individual countries in response to these shocks would be smaller because the values of currencies would change and absorb some of the shocks. Changes in the values of currencies would be continuous and gradual, and the deviations between the market values of currencies and the equilibrium values inferred from differences in national inflation rates would be smaller than when currencies were pegged.

The proponents also suggested that national monetary areas would be more fully insulated from each other because of uncertainty about the prices of currencies, which would deter investors from moving money from one currency area to another. Hence the differentials in interest rates on similar securities denominated in various national currencies could be larger than when currencies were pegged. A structural shock in one currency area would be muffled in its impacts on other currency areas; more of the adjustment to the shock would occur in the country where the shock occurred. Because of the increase in insulation among currency areas, central banks would have greater monetary independence; they would no longer be constrained to ensure that their interest rates would not differ significantly from the interest rates of the Federal Reserve.

The proponents' central claim was that changes in the values of currencies would be stable, not often or usually, but virtually always—except in special cases associated with financial fragility. Stable was not defined, but the analogy with pornography is relevant in that instability would be immediately recognizable when it appeared, and reflect that changes in the prices of currencies would “feed on themselves”. The proponents' rationale for the claim that changes in the prices of currencies would be stable can be viewed in the context of three “debates”. The first involved Friedman's early 1950s critique of Ragnar Nurkse's 1944 interpretation of the changes in currency values in the interwar period, the second involved Friedman and Robert Roosa at the American Enterprise Institute in 1966, and the third centered on Friedman's critique of a presentation by Charles P. Kindleberger at a Melvin Village conference sponsored by the Federal Reserve Bank of Boston in October 1969.

Nurkse had written:

Such anticipations are apt to bring about their own realization. Anticipatory purchases of foreign exchange tend to produce or at any rate to hasten the anticipated fall in the exchange value of the national currency, and the actual fall may set up or strengthen expectations of a further fall. The dangers of such cumulative and self-aggravating movements are clearly demonstrated by the French experience of 1922-26. (*International Currency Experience*, p. 118)

Friedman responded, in “The Case for Flexible Exchange Rates”

It is said that speculators will take the decline in the exchange rate as a signal for further decline and will thus tend to make the movements in the exchange rate sharper than they would be in the absence of speculation. ... I am very dubious that in fact speculation would be destabilizing. ... People who argue that speculation is generally destabilizing seldom realize that this is largely equivalent to saying the speculators lose money, since speculators can be destabilizing in only if speculators on the average sell when the currency is low in price and buy when it is high. It does not, of course, follow that speculation is not destabilizing, professional speculators might on the average make money while a changing body of amateurs regularly lost larger sums. But while this may happen, it is hard to see why there is a presumption that it will. (*Essays in Positive Economics*, p. 175)

Friedman gave the first lecture at the AEI debate, Roosa responded about a week later, and the third debate a week later involved rebuttals and a discussion and questions from the floor. Friedman wrote:

A second objection that is raised is that floating exchange rates would be highly unstable and that unstable rates would add to the uncertainty and difficulty of conducting foreign trade. ... If floating rates are highly unstable, it will be because the internal monetary and policies of the countries or some other aspect of their economies are highly unstable. But in that case the uncertainty there and the only question is what form it would take.

He continued:

A related argument is that the uncertainty under floating rates would be greater than under other systems because floating rates would give rise to destabilizing speculation. When I first began write on this subject nearly two decades ago, I took this objection seriously. I no longer do. In the interim, there have been a considerable number of careful empirical studies of speculation under floating rates. No one has produced a clear example of destabilizing speculation on any significant scale. And the bulk of the evidence strongly supports the views that speculation has generally be clearly stabilizing, I think it is time therefore that this bug-a-boo be given a decent burial—at least until somebody can come up with some clear empirical evidence that it is more than a bug-a-boo.

The major objection raised against floating rates is one already mentioned—that it would remove the “discipline” which fixed rates are said to impose on domestic economic policy, that it would open the door to irresponsible to inflationary monetary policy. (AEI pp. 20–21)

Roosa asked:

How can he [Friedman] go on to say that he is going to bury decently the view that speculation under floating rates can be destabilizing. He says actually there has never been a study that showed this destabilizing effect. Now I don't pretend to read all that I should, but the Aliber work in the Yale Economic Essays five years ago certainly shows

that in the case of all of the European countries after World War I, that is, ... under the conditions then prevailing, the effect of fluctuating rates was to create a speculative aggravation, a sequence of destabilizing influences.

Friedman responded:

I have looked at ... (the) study and as you know there, there are also a series of studies that have appeared in International Monetary (Fund) Staff Papers by Tsiang on postwar European experience.

And in addition, there have been a series of studies on South American countries, and more recently the Canadian experience. All of these suggested the absence of destabilizing capital movements, but this isn't the place where we can thrash it out.

Roosa:

No, to be sure. But all I was saying was that there is evidence both ways, not only one way. Your original statement was that you were going to bury the thing because no one else had any contrary experience.

Friedman subsequently added a one page note and concluded, "At bottom, therefore, Aliber's negative conclusions about flexible rates rest primarily on the experience of France, and even for France, on a possible but not demonstrated link between speculation and internal policy.

Charles P. Kindleberger borrowed nearly all of the title of a paper by Harry G. Johnson for his own paper, "The Case for Fixed Exchange Rates, 1969"; he substituted "fixed" for "floating." He questioned whether hedging could reduce the uncertainty, but he did not raise any questions about the cost of hedging.

But suppose capital moves not in response to domestic interest rate changes but autonomously—because capitalists do not like government policy in the nationalization of electricity (Italy, 1963), or because of student-worker riots (France, May–June 1968). The list is endless. ... The balance of payments would be cleared by depreciation, but the new and lower rate would be likely to undervalue the currency and stimulate possibly irreversible rises in wages and prices.

Friedman discussed the Kindleberger paper. He wrote:

Let me turn to what I regard as the probably the most important single issue involved in the argument for and against flexible rates. It is the issue brought up by Charlie [Kindleberger] when he asserted the essential case for fixed rates and against flexible rate is that there is less exchange risk under fixed rates than there is under flexible rates. ... In respect of this argument, I feel as if this is one of those continuous movies, and this is where I came in 20 years ago. In 1950, ... I took seriously the argument that there might

be destabilizing speculation. ... It is now 20 years later. There has been an enormous amount of empirical work done on this issue. In a debate a couple of years ago with Bob Roosa, I challenged him—and now I challenge Professor Kindleberger and I challenge Sir Maurice Parsons—to provide not assertion, not fears, but some empirical evidence that shows that such consequences do flow from flexible rates. Destabilizing speculation is a theoretical but I know of no empirical evidence that it has occurred even as a special case, let alone as a general rule.

He continued:

Isn't it obvious that fixed rates remove risk and flexible exchange rates increase exchange risk? Not at all. The amount of uncertainty that there is to be met is unchanged. The difference between the two systems is the form that the uncertainty takes. ... Where do these exchange uncertainties arise from? They arise from the variations in the real forces affecting international trade. ... They arise from the adoption of different monetary policies by different countries, the adoption of different fiscal policies, earthquakes—all of these sources of uncertainty are present, whether you have fixed or flexible rates. (Federal Reserve Bank of Boston, pp. 114-115)

Friedman's comment that "all of these sources of uncertainty are present, whether you have fixed or flexible rates" does not seem consistent with the view that one of the advantages of a floating rate arrangement is monetary independence. Once currencies are no longer pegged, various monetary shocks are possible, including changes in the money supply growth rates, the demand for money, exchange controls, and the demand for foreign money and foreign securities.

Changes in monetary policy when currencies are floating seems likely to be a source of uncertainty that is not present when currencies are pegged (except when the stability of the peg is questioned), since central banks—other than the Federal Reserve— would not have the freedom to change their monetary policies. Once currencies are floating, demand-side monetary shocks as well as supply-side monetary shocks might occur.

Two criticisms that involve consistency can be directed at the claims of the proponents. The proponents challenged the contention of the critics that uncertainty about values of currencies would deter international trade and investment with the statement that uncertainty could be hedged by purchase of forward contracts. However, the proponents failed to ask whether the hedging of currency risk was a free lunch or whether there were costs.

The financial cost of hedging is the return from not hedging. If forward exchange rates or prices were an unbiased forecast of spot exchange rates on the dates that the forward contracts mature, this financial cost would not differ from zero. Still, uncertainty about the cost could deter. The uncertainty about the value of the currency becomes transformed into uncertainty about the costs of hedging. The proponents wanted the best of both worlds—they wanted to deny that uncertainty about currency values would deter trade and investment but they wanted to assert that uncertainty would provide the insulation among currency areas necessary if central banks were to have greater monetary independence than when currencies were pegged. If the

uncertainty that might deter investors from moving funds among currency areas can be readily and costly hedged, then monetary independence is illusory.

The second consistency issue involves the relationship between the normative and positive claims for monetary independence and the array of shocks that would impact the currency market. The proponents believed that the shocks that would lead to changes in the values of currencies would be structural. Some of these shocks would lead to cyclical variations in the market value of a currency from its long-run equilibrium value, while other shocks would lead to changes in the long-run equilibrium value. The irony is that one of the major normative arguments for the elimination of parities was that central banks would have monetary independence, which would facilitate larger changes in both central bank interest rates and the rates of money supply growth. The proponents have been reluctant to recognize the likelihood of demand-side monetary shocks.

II. FIVE STYLIZED FACTS ABOUT THE VOLATILITY OF CURRENCY AND ASSET PRICES

Five sets of stylized facts characterize the international economy in the last forty years. The first is that the variability in the prices of currencies has been large, much larger than when currencies were pegged. The variability in the nominal prices of currencies was to be expected; the surprise has been that the variability in the real prices of currencies has been many times larger than when currencies were pegged. The large variability in the prices of currencies has come in waves; the first wave occurred in 1982, the second in the early 1990s, the third in 1997, and the fourth in 2007–08. Some currencies have fallen off steep cliffs; their nominal values have declined by fifty percent or more in a month. Consider Iceland, Indonesia, South Korea, and Mexico. Large changes in the nominal and the real values of currencies are associated with large changes in the values of current account balances.

FIGURE 1

CHANGES IN VALUES OF CURRENCIES AND TRADE BALANCES

	Nominal value	Real value	trade balance/GDP
FIRST WAVE			
Mexico			
Brazil			
Argentina			
South Korea			
SECOND WAVE			
Japan			
Finland			
Norway			
Sweden			

THIRD WAVE

Mexico
 Thailand
 Indonesia
 Malaysia
 Philippines
 South Korea

FOURTH WAVE

Britain
 United States
 Iceland
 Spain
 Ireland

In the countries that experienced the money inflows, the scope of deviations from purchasing power parity or any other measure of long-term rates has been much larger than when currencies were pegged. When currencies have appreciated, they have become increasingly overvalued, and the current account deficits have increased. When these currencies have depreciated, the current account balances have changed, often sharply; some countries have experienced a shift in their current account balances of eight or ten percent as a share of their GDPs.

The second stylized fact is that there have been four waves of financial crisis in which large numbers of banks and other financial firms have failed or have stayed in business only because of extensive investments by their national governments. Each wave has been associated with a depreciation—often a sharp depreciation—of the currencies of the affected countries. The first wave of crisis occurred in 1982 when the governments and government-owned firms in Mexico, Brazil, Argentina, and ten or so other countries indicated that they were unable or unwilling to make the scheduled debt service payments on their U.S. dollar loans. Their currencies depreciated sharply. Many banks in these countries failed. Some U.S. banks that had extended credit to these borrowers would have had solvency issues if regulators had not connived in the fiction that these loans were performing. The second wave involved Japan and three of the Nordic countries; most of the banks in these countries failed. The Asian Financial Crisis that began in July 1997 was the third wave; the banks in most Asian countries other than Hong Kong and Singapore were done in by their revaluation losses. The crisis in Mexico during its presidential transition at the end of 1994 was a prelude to the Asian crisis, in that the preconditions were more or less identical. Note the Tequila crisis. The fourth wave involved the United States, Britain, Ireland, Spain, and Iceland, as well as Greece and Portugal.

FIGURE 2

TABLEAU OF FINANCIAL CRISIS

Comment

FIRST WAVE

Mexico
Brazil
Argentina
South Korea

SECOND WAVE

Japan
Finland
Norway
Sweden

THIRD WAVE

Mexico
Thailand
Indonesia
Malaysia
Philippines
South Korea

FOURTH WAVE

Britain
United States
Iceland
Spain
Ireland

Some countries, including Mexico and South Korea, were involved in two of the waves. The foreign lenders incurred significant losses in the first wave. The banks in Japan incurred significant losses in the first wave and massive losses in the second. Citibank incurred large losses in the first wave and massive losses in the fourth. The banks in the United States and Britain incurred immense losses in the fourth wave on their domestic real estate loans.

The third set of stylized facts is that in the several years prior to each of the waves of crisis, there were waves of credit binges—the external indebtedness of the countries that will experience the crisis increases at rates of twenty to thirty percent a year for three or more years. The external indebtedness of the governments and of government-owned firms in Mexico and other developing countries increased by twenty percent a year for ten years; their total indebtedness increased from \$125 billion in 1972 to \$800 billion ten years later. Virtually all of the developing countries experienced increases in their indebtedness; South Africa was a principal exception. The increase in the growth of credit in Japan was not associated with an increase in external indebtedness; however, the foreign demand for Japanese securities was

increasing in part because the currency was appreciating and in part because stock and real estate prices were increasing by thirty percent a year. Bank credit to the real estate borrowers increased at rates of twenty-five to thirty percent a year.

The cross border credit flows in the binge that preceded the third wave of crisis was more variegated. Many emerging market countries were involved in extensive privatization programs, which attracted both portfolio investors and multinational firms that were acquiring some of these newly privatized firms as subsidiaries. One imaginative analyst had discovered emerging market equities as a new asset class; every mutual fund and pension fund that followed an index fund approach to developing a portfolio of equities bought shares in these firms. The Brady bond initiative led to the funding of the overhang of bank loans to the governments of these countries; these countries were again bankable. The Mexican economy was being prepped so Mexico could join the North American Free Trade Agreement; the Bank of Mexico had adopted a powerful contractive monetary policy to reduce the inflation rate from triple digits to single digits, with the result that real interest rates were very high, even in terms of the U.S. dollar—U.S. money market funds bought large amounts of short-term peso securities. The appreciation of the yen led many Japanese firms to develop subsidiaries in China and various countries in Southeast Asia where high value-added components imported from Japan could be assembled by low-wage unskilled labor.

During the fourth wave the external indebtedness of Iceland was increasing at a phenomenal rate. Similarly, the external indebtedness of the United States and of every other Anglo-Saxon country—except Canada—was increasing; each of these countries had a large trade deficit.

FIGURE 3

INCREASES IN EXTERNAL INDEBTEDNESS –levels and interest payment CHANGES IN RATIO OF CURRENT ACCOUNT BALANCE/GDP

FIRST WAVE

Mexico
Brazil
Argentina
South Korea

SECOND WAVE

Japan
Finland
Norway
Sweden

THIRD WAVE

Mexico
Thailand
Indonesia

Malaysia
Philippines
South Korea

FOURTH WAVE

Britain
United States
Iceland
Spain
Ireland

The fourth set of stylized facts is that asset prices—the prices of bonds, stocks, and real estate—have been highly variable. The first wave of crisis occurred in 1982; the prices of the bank loans to the governments of Mexico et al. declined sharply. Asset prices within these countries also declined. The subsequent three waves of financial crisis have occurred as a result of the declines in the prices of real estate, especially after extended periods when these prices have increased significantly. The financial crisis in Japan and Iceland occurred after declines in the prices of stocks and real estate. In some countries, the stock price index is a crude barometer of the house price index, especially when property prices have increased by a large amount.

FIGURE 4

CHANGES IN STOCK PRICES

T=peak month

t-3 t-2 t-1 t t+1 t+2 t+3

FIRST WAVE

Mexico
Brazil
Argentina
South Korea

SECOND WAVE

Japan
Finland
Norway
Sweden

THIRD WAVE

Mexico

Thailand
 Indonesia
 Malaysia
 Philippines
 South Korea

FOURTH WAVE

Britain
 United States
 Iceland
 Spain
 Ireland

The fifth set of stylized facts is that the trading revenues of the firms that buy and sell currencies and securities have increased at a very rapid rate, much more rapidly than GDP, the volume of international trade, or most other macro variables. There is general acceptance of the view that the bid-ask spreads—at least quoted bid-ask spreads—have declined as a result of increases in competition and developments in technology. Hence trading revenues have surged; and these revenues have increased much more rapidly than international trade, the sum of international trade and investment, and virtually every other macro variable. The trading revenues of the large international commercial banks also increased rapidly, although these revenues are small relative to their total revenues. Hedge funds traded currencies and securities; it seems plausible that their trading revenues have soared. The logical implication is that the increase in trading revenues reflects that the number of securities and commodities that are traded has increased. The alternative explanation is that the revenues per unit of international trade or per unit of international trade and investment have increased.

Consider Iceland. Employment in financial services increased from 3,000 to 7,000 in five years. Financial services include commercial banking, investment banking, pension management, asset management, and insurance. Employment in insurance, pension fund management, and asset management probably did not increase significantly as a share of GDP. Hence the employment in trading activities, especially the trading of currencies and stocks, soared.

In 2002, the market value of the U.S. firms in the financial sector accounted for ten percent of the market value of all U.S. stocks. In 2006, this ratio was forty-five percent. The increase is striking. The share of the market value during the base year was not exceptionally low and can be considered representative. Hence the increase in the share of the market value of U.S. financial firms is exceptional, similar to the development in Iceland.

III. MONETARY SHOCKS AND CHANGES IN ASSET AND CURRENCY PRICES

Large changes in the values of currencies and of assets denominated in the U.S. dollar, the British pound, the Japanese yen, the Icelandic krona, the Thai baht, and other currencies are responses to shocks. One analogy is that sharp changes in the price of petroleum are responses to shocks, both increases and decreases in either supply or demand. Because both the supply and the demand are price inelastic in the short run, a modest percentage change in the supply-demand relationship can lead to percentage changes in price that are ten to twenty or more times larger.

Some shocks that lead to changes in the values of currencies are structural, and others are monetary. Structural shocks initially impact the trade account, and the change in the price of the currency will induce a corresponding change in the country's capital account balance. (Because of the balance of payments accounting identity, an autonomous change in the current account balance must lead to a corresponding induced change in the capital account balance; similarly, an autonomous change in the capital account balance must lead to a corresponding induced change in the current account balance.) In contrast, monetary shocks primarily impact the capital account; the change in the price of the currency will lead to a corresponding change in the country's trade balance.

Whether a shock is structural or monetary can be deduced from the combination of the change in the value of a country's currency and the change in the value of its current account balance. Assume a structural shock: the oil price increases and Ruthenia's oil import bill increases, Ruthenia's trade deficit increases, and the Ruthenian pengo depreciates. Assume instead a monetary shock in the form of an increase in the foreign demand for Ruthenian securities; the Ruthenian pengo appreciates and Ruthenia's trade deficit increases. Consider another monetary shock in the form of an increase in the Ruthenian demand for foreign securities; the Ruthenian pengo depreciates and Ruthenia's trade surplus increases. If a shock leads to an increase in Ruthenia's trade deficit and its currency depreciates, the shock is structural; if instead its currency appreciates, the shock is monetary.

The first credit binge shock occurred in the early 1980s when the foreign demand for the dollar-denominated IOU's of government-owned firms in Mexico, Brazil, Argentina, and ten other developing countries increased sharply. The inflation in the industrial countries led to a surge in commodity prices, the rates of growth of GDP, and the anticipated rates of growth of GDP in the countries that produced petroleum, wheat, copper, palm oil, etc. Mexican oil production was surging at the same time that the oil price was increasing rapidly, by a factor of five during the first oil shock and by a factor of three during the second. At about the same time, the inflation led to a surge in the deposits of offshore banks because banks in the United States were prevented by the Regulation Q interest rate ceiling from raising interest rates. Non-U.S. banks then used the offshore banks as a source of dollar funds that they in turn lent to the governments in Latin America and elsewhere.

The governments and government-owned firms in the developing countries initially used the dollar funds obtained from the increase in their indebtedness to buy more international reserve assets. Some of these dollars were used to pay for imports. Some were used to buy their

own currencies, which they would then use to pay for locally produced goods and services. The currencies of these countries appreciated in real terms, and their trade deficits increased. The rate of growth of the indebtedness may have been more or less constant, but the difference between the increase in the U.S. dollar value of the indebtedness and the annual interest payments on the indebtedness was increasing, which led to a real appreciation of the currencies of these countries and increases in the country's trade deficits.

One factor that differentiates the first wave of credit binges from subsequent ones is that the supply of IOUs increased as rapidly as the demand. In contrast, during the next three waves the demand for securities increased much more rapidly than the supply, and the prices of these securities increased. Consider the increase in foreign demand for the securities denominated in the Icelandic krona that began about 2002. The investors who intended to buy these krona securities first had to buy krona deposits in the currency market; the demand for krona deposits was coupled with demand for krona securities and could not be separated. Their purchases led to the appreciation of the krona and to an increase in the price of krona securities.

The Icelandic residents that sold Icelandic securities to nonresident investors then had to decide what to do with their krona receipts—they could buy consumption goods or they could buy other Icelandic securities from other Icelandic investors, or they could do both. They did both, but mostly they purchased other Icelandic securities from other Icelandic investors. These investors then had the same decision problem, and they in turn bought more consumption goods and other Icelandic securities, but again they mostly bought other Icelandic securities. The money realized from the sale of securities had become like the proverbial hot potato, passed from hand to hand at ever higher prices.

The increase in prices of Icelandic assets was an integral part of the adjustment process that would ensure that the induced increase in the country's current account deficit would correspond with an autonomous increase in its capital account surplus. (Elsewhere I have described this development as part of the transfer problem process, which was inspired by Keynes's analysis of the German reparations payments.) Hence the cross-border money flows led to significant increases in the rates of growth of GDP in the countries that experienced these inflows as a result of the increase in spending induced by the increase in wealth.

The increase in spending led to upward revisions in the anticipated rates of return investments in Iceland. Foreign money continued to flow in. (The issue in the Iceland case is somewhat complex, in that the scoundrels that ran the Icelandic bank took the initiative in sourcing funds abroad. The pattern was similar to that when the Nordic banks were raising money abroad, with the difference that far less attention has been paid to similar behavior by Nordic bankers.)

Most of the increase in spending induced by the inflow of money from abroad led to a surge in consumption spending. The impacts of the increase in money inflows of the mix of more investment spending and more consumption spending when currencies are floating differs sharply from when they are pegged.

The impact of an increase in cross-border flows on the values of the currencies and the prices of assets depends of a variety of country-specific factors. The higher the short-run elasticity of imports and exports, the smaller the increase in the price of the currency. The smaller the increase in consumption spending as wealth increases, the larger the increase in wealth for a given money inflow.

The process of “overshooting” is an integral part of the adjustment process, and not a temporary or transient phenomenon that results from lags in the adjustment of importers and exporters to the change in relative prices.

The second wave of credit binges involved Japan, Finland, Norway, and Sweden. Their economic circumstances are different, in that Japan had a current account surplus, while each of the other countries had a current account deficit. Both binges resulted from currency market events. The Japanese yen had depreciated sharply in response to the Volcker shock, and it continued to depreciate until the spring of 1987, even though U.S. monetary policy had become less contractive in 1981. The foreign demand for Japanese stocks began to increase as foreign investors sought to take advantage of the striking increase in prices. The sharp increase in stock prices appears to have derived from the boom in real estate prices, which had been increasing since the early 1980s. Many of the firms listed on the stock exchange were property companies; as real estate prices increased, the value of their assets increased—and hence the ratio of the value of the firm’s assets to the number of its shares outstanding increased. The Japanese financial authorities were reluctant to allow the yen to depreciate because of the adverse impact on exports, and they adopted various measures to dampen the appreciation. They purchased large amounts of dollars. Controls on foreign payments were relaxed. Restrictions that limited bank loans for real estate were relaxed. Real estate prices and stock prices were increasing at annual rates of twenty-five to thirty percent. Japan experienced a major economic boom.

The credit binges in the three Nordic countries were similar to the one in Japan in that they were responses to the relaxation of controls, but they differ in that these controls previously had limited borrowing in the offshore market by the banks headquartered in these countries. These banks borrowed from the offshore banks and lent the money to their domestic customers, who then used the dollar funds to buy their own currencies, which then appreciated.

The credit binges that preceded the Asian Financial Crisis were much more variegated in the foreign sources of credit, although the similarity with several of the earlier episodes was that the increase in the dollar value of external indebtedness was much larger than the increase in the interest payments on the indebtedness. The increase in these credit flows led to the appreciation of the currencies of the countries that experienced these flows, and to increases in asset prices in these countries.

Each of the countries that experienced a credit binge after 2002 also experienced an increase in money inflows; their currencies appreciated and their trade deficits increased—which leads to the inference that their capital account surpluses increased. There was an autonomous increase in China’s trade surplus, which led to an increase in China’s purchases of the IOUs of Fannie Mae and Freddie Mac, the large government-sponsored mortgage lenders. The increase in

the supply of mortgage credit contributed to a surge in housing starts and a consumption boom financed with the money from mortgage equity withdrawals.

The similarity is that each of these four waves of credit binges begins with an increase in the foreign demand for securities denominated in a particular currency; the demand may be from foreign residents or it may be from domestic residents who have borrowed in the offshore market because the costs are less than those they would incur if they borrowed at home. The currencies of the countries experiencing the money inflow increase. Asset prices increase in these countries; the increase in asset prices is an integral part of the adjustment process, ensuring that there will be an induced increase in the country's current account deficit that will correspond with the autonomous increase in its capital account surplus.

The booms in these countries seem like self-fulfilling events, since greater economic activity leads to increases in the anticipated rates of return. The investors who buy these securities benefit from the appreciation of the currencies that they are acquiring, and the higher rates of return (or the reduction in interest payments).

Hence it is not a coincidence that the increase in asset prices and the increase in the prices of these currencies occur at the same time; both are responses to money inflows. And the increase in asset prices is an integral part of the adjustment process in response to the increase in money inflows.

One feature common to each of these waves of credit binges was that the rate of growth of indebtedness was significantly higher than the interest rate on the indebtedness. The borrowers were in a marvelous position because all of the cash that they needed to pay the interest on the indebtedness came from new loans—if they were involved in real estate, the cash to pay the interest would come from borrowing against the increase in the market values of their properties. Hence the borrowers incurred no burden in servicing their debt. However, this pattern of cash flows was not sustainable. At some stage it was inevitable that several of the lenders would become more cautious in extending new loans. When that happened, some of the indebted would develop a debt servicing problem.

The surge in interest rates that followed the Volcker shock in October 1979 triggered the first wave of financial crisis. The interest rates on most of their indebtedness were floating, and based on LIBOR, and hence the interest rates that the borrowers were obliged to pay soared. At the same time, the lenders rapidly reduced their willingness to extend new loans. The change in the relationship between money from new loans and interest payments on old loans meant that the currencies of the countries that had been experiencing money inflows declined—and that decline meant that the willingness of the lenders to extend more credit to these countries also declined.

The decline in the relationship between money inflows on new loans and interest payments on outstanding debt led to a decline in the current account deficits. The decline in the supply of the resources relative to the demand for credit led to a surge in interest rates; asset prices declined. The pattern is more or less the mirror of what happened when the current account deficits increased.

The shock that led to the decline in asset prices in Japan at the beginning of the 1990s may have been a window-guidance type statement by the incoming governor of the Bank of Japan that the banks should limit the growth in their loans for real estate so they were no more rapid than the growth in their total loans. (The intuition is that the reduction in credit supply that followed from the implosion of the bubble in Japan was the trigger for the implosion of the bubbles in the Nordic countries.)

The shock—or shocks—that led to the financial collapse in Mexico during the presidential transition at the end of 1994 began with a series of political incidents. The first was an Indian uprising in January in Chiapas, the southernmost state—a localized revolution. Then in March the leading presidential candidate of one of the major opposition parties was assassinated. These incidents reduced the foreign demand for Mexican securities. Mexico then financed the large current account deficit that had resulted from money inflows by spending down its own reserves, and when the reserves were nearly exhausted, the peso depreciated sharply.

The shock that led to the decline in asset prices that precipitated the Asian Financial Crisis appears to have been problems in Thailand that non-bank lenders (which were the captive affiliates of the banks) in securing repayment on the credit card indebtedness that had soared.

The shock that led to a decline in real estate prices in the United States toward the end of 2006 was a reduction in the foreign demand for U.S. dollar securities, which led to a depreciation of the U.S. dollar and a reduction in the U.S. trade deficit. Those real estate investors that had relied on the cash from mortgage equity withdrawals to pay the interest on their indebtedness were in a bind, and many moved on the path to default and foreclosure.

The shocks that led to the declines in the prices of currencies during these several waves were idiosyncratic, just as the shocks that led to the increases in these prices were. The difference was that the depreciation of these currencies was inevitable because the rate of increase of indebtedness was too rapid relative to the interest rate and to the rates of growth of GDP and income. Once the rate of growth of indebtedness began to slow, the currencies of these countries would depreciate, and asset prices began to decline.

The surge in the trading revenue of the firms that buy and sell currencies and securities reflects the large variability in the prices of these currencies and securities. These revenues arise from market-making transactions and transactions of proprietary traders.

IV. THE SURGE IN BANK TRADING REVENUES

A key issue in the choice among currency arrangements is whether the prices of the currencies will be stable. One of the contentious issues in the 1960s debate centered on the relationship between the revenues and profits of the firms that trade currencies and the impacts of their transactions on the range of movement in the prices of currencies; the question was whether the transactions of the speculators would dampen or amplify the range of movement in these prices.

Part of the increase in trading revenues of the banks is from transactions in currencies, and part is from transactions in securities. One estimate is that twenty five percent of the revenues of the ten major banks are from trading currencies and that seventy five percent are from trading securities. Individual banks differ in the mix of revenues from these two trading activities, and the relative importance of each source of revenues for an individual bank may change over time. The monetary shocks that have led to sharp changes in the prices of currencies generally also have led to sharp changes in the prices of securities. When currencies have appreciated, the revenues from trading currencies and from trading securities have been additive. In contrast, when currencies have depreciated, the losses that some of the banks have incurred on their ownership of foreign securities have been larger than their revenues from trading currencies.

The comments in the remainder of this section focus on the market for currencies, although the presumption is that many of the arguments apply to the markets for currencies. Participants in markets for currencies can be grouped as outsiders or insiders depending on the motives for their transactions. The outsiders buy currencies as a necessary intermediate transaction because they need to pay for their purchases of foreign goods and securities. The purchases of foreign currencies incur a cost in the form of their share of the bid-ask spread; they put “money on the table.”

The insiders, by contrast, deal only in currencies. The amount of money that the insiders appear to have taken “off the table” has soared, but the outsiders never complain that they are being ripped off. (Some clients of several of the U.S. trust banks have complained that they have been ripped off because the trust banks have massaged the prices set for the purchase of foreign currencies. U.S. merchants have been vociferous in their complaints that the interchange fees charged by Visa and MasterCard are exorbitant. The three percent fee charged by some of the credit card companies for charges in foreign countries is a “rip-off” that has no justification in terms of costs incurred by the companies.)

The goods market traders are one of the two groups of outsiders; these importers and exporters seek to profit from the differences between domestic prices and foreign costs. They hold their positions in foreign currencies for no more than an hour or a day; ideally they would buy the foreign currency at the same moment that they need to pay their foreign suppliers. The goods market traders do not seek to profit from changes in the values of the currencies that they buy, although some may “shop” among banks for more attractive prices. (The treasurer’s offices of the firms that are goods market traders may buy and sell currencies and securities in search for profits. See the discussion of proprietary traders below.)

The carry trade investors are the second group of outsiders that put money on the table as they arbitrage differentials in interest rates on similar securities available in different countries—there may be fifty seven varieties of these investors. . Some carry trade investors acquire only the credit risk attached to foreign securities; they believe the interest rate differentials are large relative to the probable losses if the borrowers default. In the early 1970s Citibank, Bank of Montreal, and Bank of Tokyo borrowed U.S. dollars in the offshore money market and bought the U.S. dollar-denominated IOUs of the governments of Mexico and Brazil. More recently,

banks headquartered in one of the countries in Northern Europe borrowed Euros to get the money to buy the bonds of the Greek and the Portuguese governments. (The carry trade investors who believe that they have only acquired the credit risk occasionally have realized—often too late—that they have acquired a currency risk once-removed—a dollar loan to the Government of Mexico was “a peso loan in drag.”)

Some carry trade investors acquire both the credit risk and the currency risk; they believe that the interest rate differential is large relative to the anticipated depreciation in the foreign currencies and the embedded credit risk. Mrs. Watanabe in Tokyo withdrew yen from her account at Fuji Bank, and bought an annuity denominated in the U.S. dollar and another in the Australian dollar. Mrs. Watanabe often observed that the securities that she purchased were denominated in currencies that appreciated for three, four, or more years. In the late 1980s the banks in the three Nordic countries borrowed U.S. dollars in the offshore money market, which they then lent to their domestic borrowers, who then used the U.S. dollars to buy their local currencies.

The market makers in the commercial and investment banks are one group of insiders; they quote bid and ask prices and are ready to buy and sell a standard amount of foreign currencies at these prices. The chatter is that the market makers do not know whether the potential customer is more likely to be a buyer or a seller. They adjust their bid and ask prices in response to changes in market conditions. They do not carry significant positions in foreign currencies overnight. The market makers are like gate keepers for those who want to buy and sell currencies—the counterpart of the toll collectors on the New York State Thruway. They take money off the table virtually every day.

The proprietary traders are the second group of insiders; they seek to profit from short-term movements in the prices of currencies. Some of these traders work for banks, some for hedge funds, and some for themselves. Each proprietary trader is a profit center and likely to shop the street for the most favorable prices. Some of these traders make a large number of transactions in the course of the day; they hold their positions for short periods. They make a profit, close their position, park the profit, and then begin to trade again. If they suffer a loss, they also close their positions. Some of these traders do not carry significant positions overnight, while other carry their positions for several days or a week. The proprietary traders primarily are trend followers or momentum traders; they follow the maxim that “the trend is your friend.” George Soros was a proprietary trader when he shorted the British pound and the Italian lira when the Exchange Rate Mechanism was breaking up in 1992. Obviously, not every trade is profitable, but the winning percentages are high enough that 32-year-olds in jeans can take home \$10 million a year.

The big change in the pattern of international transactions in the last thirty years is that the currency transactions of the carry trade investors have increased significantly, but the volume of their transactions is still modest relative to the volume of international trade. Nevertheless, the changes in the volume of their transactions (which can be inferred from the changes in the values of each country’s trade balance) explain the large swings in the values of currencies.

The amount of money that the insiders have earned seems exceptionally large relative to the amount that the outsiders believe they have put on the table. Because developments in technology and competitive market forces have led to declines in bid-ask spreads, the revenues of the market makers probably have increased no more rapidly than the volume of international trade or the volume of international trade and investment, and perhaps even less rapidly.

The sharp increase in the revenues of the insiders has resulted from the transactions of the proprietary traders, which would follow from their momentum-based trading strategies during periods when there have been long swings in the values of currencies—currencies appreciate for three or more years in response to the increase in the optimism of the carry trade investors. Some proprietary traders use a great deal of leverage, so even modest changes in the values of the currencies can lead to exceptionally high rates of return.

In effect the proprietary traders piggyback on the currency transactions of the carry trade investors by buying in the morning the currencies they believe the carry trade investors will buy in the afternoon and they then sell these currencies to the carry trade investors. The proprietary traders are engaged in a form of front-running but without the negative connotation of abusing inside information. (Some of these proprietary traders may rely on information about the patterns of transactions obtained from the market makers in the same firms.) They observe the trend in the currency movements and buy currencies that are appreciating. They hold these currencies for a few minutes or hours, and then close their positions, bank their profits, and repeat the process. Because of their transactions, the currency appreciates a bit more rapidly than would otherwise have been the case. And the scope of the appreciation and depreciation is larger—modestly larger—than it otherwise would be. Some of the proprietary traders may lose money at the turning points of the long swings—but these turning points are relatively infrequent and the losses are generally trivial relative to the profits during the extended periods of appreciation. And when the currencies that had been the favorites begin to decline, the proprietary traders are in the front rows of the sellers.

The variability in the prices of currencies would be largely unchanged in the absence of the transactions of the proprietary traders; the peaks and troughs in the currency values would be slightly less pronounced. The market makers would not take more money off the table if there were fewer proprietary traders. The revenues that otherwise would have been taken by the proprietary traders would be available to both the goods market traders and the carry trade investors in the absence of the proprietary traders.

The market makers take cash off the table, day by day, week by week. The goods market traders put modest amounts of cash on the table when they pay for their imports. The carry trade investors also put money on the table when they buy foreign currencies, but they are comfortable because the revaluation gains they are experiencing are many times larger than their share of the transactions costs. In the longer run, however, many of the carry trade investors lose money because the foreign currencies depreciate and the borrowers default.

The proprietary traders also take money from the market. It is not money that has been on the table, but rather it's from the wedge or tax between the prices paid by the carry trade investors and the prices received by goods market traders. Proprietary traders as a group make

money, and obviously not from the market makers, and hence the money must come from the transactions with the outsiders—the goods market traders and the carry trade investors. The volume of their transactions has increased far less rapidly than the revenues of the proprietary traders; the implication is that the ratio of money extracted from the market to the volume of international trade or to the volume of international trade and investment has surged.

High frequency traders follow several different algorithms. Some are like market makers and focus on the bid-ask spread. The impact of their transactions is to cause more rapid changes in the bid-ask spread. The revenues that they take off the table are at the expense of the incomes of the goods market traders and the carry trade investors. Some high frequency traders follow momentum trading strategies more or less like those of proprietary traders and are a subgroup of those that follow this strategy.

The most plausible explanation for why the goods market traders and the carry trade investors do not complain about the revenues of the proprietary traders is that they do not realize that these revenues are at their expense. When a currency appreciates, some of the goods market traders earn larger arbitrage profits and the carry trade investors have larger unrealized revaluation profits. When a country's currency appreciates, its export prices will tend to increase in terms of foreign currencies and its import prices in terms of foreign currencies will decline. The appreciation is associated with a transfer of real income to the countries from its trading partners. An analogy is the transfer of real income from oil importing countries to oil exporting countries when the petroleum price increases. This transfer is hidden and silent and occurs because of the change in the relation between import and export prices. This transfer can be very large as a share of the annual increase in the country's GDP if the tradable goods sector is a large part of the economy.

In the first instance, the transfer of real income impacts those involved in international trade; competition eventually will mean that some of the gains in real income are passed on to domestic consumers in the form of lower prices for imports and to those involved in production of exports in the form of higher incomes.

Part of the transfer of real income is captured by the proprietary traders as the currency appreciates, and part is captured by them as the currency depreciates and the direction of the transfer is reversed. (The goods market traders may not complain, at least not much, since the overshooting and undershooting provides scope for larger "arbitrage" profits.)

The carry market traders profit from the appreciation of the currency; in some cases the annual unrealized revaluation profits may be larger than the additional interest income. But when the eventual adjustment occurs and the currency begins to depreciate, these unrealized revaluation profits evaporate, to be followed by unrealized losses. When these losses are eventually realized, they may be larger than the incremental interest income.

Some departments of Citibank, Bank of Montreal, and Bank of Tokyo are carry trade investors, other departments are market makers, and still others are proprietary traders. These large banks have incurred massive episodic losses on their carry trade investments, which have dwarfed the profits from their market making and their proprietary trading in the years when the

losses have occurred. It's not clear whether the gains in the earlier years would have offset the losses. (One of my students DV of the mid-1960s visited one of my classes in the mid-1980s. He was the senior manager of the liability side of a large U.S. money center bank. His comment was, "Our bank has 10,000 employees—9,000 on the asset side and 1,000 on the liability side. We make all the money, and they piss it away.")

Because there are four groups of participants in the currency markets, the pairing of speculative transactions and profitable transactions is richer than in the traditional literature. The market makers are stabilizing speculators and earn profits, while the carry trade investors are destabilizing speculators, some of whom may sell early and leave with money in their pockets but many of whom will incur losses in the long run. The proprietary traders are destabilizing speculators and earn profits.

Do the trading desks in the banks add to or dampen the range of movement in the value? They do both. Some desks are market makers, and keep the bid-ask spreads narrow; they dampen the range; they amplify the range. They may lose money on their positions in the last few weeks or months before major turning points. But they will have made money during most of the months in the previous three or four years.

V. CONCLUSION

The move to the floating currency arrangement in the early 1970s was the default alternative because the system of adjustable parities was not compatible with significant differences between the U.S. and the German inflation rates. The move was facilitated by a set of arguments advanced by a group of distinguished economists on the advantages of a floating currency arrangement. They believed in monetary independence; they wanted each central bank to have the freedom to be able to follow the policies that would help achieve price level stability, without the constraints that its policy would lead to the loss of reserves; similarly, they did not want the central bank to be obliged to compromise its commitment to price level stability by the need to buy a large volume of foreign currencies to maintain its parity. They also wanted to minimize the distortions at the national borders from trade barriers, exchange controls, and periods of overvaluation and undervaluation.

The claims of this group of advocates for a floating currency regime can be considered as the "monetary constitution" for this arrangement. Their key assertion was that if countries were successful in achieving price level stability, the changes in the values of their currencies would be stable, and that deviations in the market values of currencies from the long-run equilibrium values would be smaller than when currencies were pegged.

Something has gone awry; the scope of overshooting and undershooting has been much larger than when currencies were pegged. Moreover, the large and sudden changes in the trade and current account balances has led to much larger shocks to income and employment from one country to others than when the currencies were pegged.

Five stylized facts centered on developments in international financial markets were noted in this paper. There have been four waves of financial crisis since the early 1980s; each involved several countries. Each of these waves was preceded by a credit binge when the indebtedness of a group of borrowers, at times governments, often buyers of real estate, increased at rates of twenty to thirty percent a year for three or more years. The rates of growth of indebtedness were several times higher than the interest rates on the indebtedness; the inflow of money from new loans was several times larger than the interest payments on the outstanding loans. Real estate prices and often stock prices increased at above trend rates for three or more years. The currencies of the countries that were experiencing money inflows appreciated by much more than would be inferred from the differences in national inflation rates, and then these currencies depreciated sharply. Finally, the revenues of the firms that trade currencies and securities have surged, and at average annual rates much higher than the rates of growth of international trade and investment.

Three patterns that linked these facts also were noted. One is that the increase in demand for securities available in a particular country has led to increases in the price of its currency and in asset prices in the country. The increase in asset prices in response to the increase in money inflows was an integral part of the adjustment process, and explained in terms of a model inspired by Keynes's analysis of the transfer problem. Adjustments in relative prices and incomes in the countries that were experiencing an autonomous increase in the foreign demand for their securities were needed to ensure that the increase in the current account deficits of these countries would correspond with the autonomous increase in their capital account surpluses. The adjustment model was that increase in asset prices in response to foreign purchases led to increases in household wealth and hence in consumption spending on both domestically produced goods and imports, and hence in GDP growth rates.

The euphoria in asset prices in the countries that experienced an increase in money inflows often led to consumption booms; in contrast when currencies were pegged, the increase in cross border inflows of money led to increases in domestic investment. The surge in mortgage equity withdrawals in the United States resulted from the sharp increase in real estate prices, which financed increased expenditures on college tuitions, vacations, and automobiles. Similarly, most of the increase in expenditures in Iceland that followed from the surge in its indebtedness was associated with a much higher level of consumption spending. The sharp increases in the external indebtedness of Mexico and other developing countries in the 1970s were associated with surges in government expenditures, mostly on consumption rather than investment.

Since indebtedness of countries and of groups of borrowers cannot increase much more rapidly than the interest rate for an extended period, it is inevitable that at some date the foreign demand for the securities available in particular countries and from what had been favored groups of borrowers would slacken. Then the prices of the currencies of the countries that had been experiencing the money inflows would depreciate. The autonomous decline in their capital account surpluses meant that adjustments would occur—automatically—so that there would be an induced corresponding decline in their current account deficits; the decline in asset prices would be an important part of these adjustments and contribute to financial crisis.

The continued gradual increase and the subsequent even sharper decreases in the prices of currencies have been associated with surges in the revenues of the firms that trade currencies and securities. Their revenues from trading currencies have increased much more rapidly than the volume of international trade and investment; the arithmetic is that the trading revenues for each \$1 billion of trade and investment have increased significantly. Four groups of participants in the currency market were noted; several of these groups contribute to these revenues. The goods market traders arbitrage the difference between domestic prices and foreign costs and incur transactions costs when they buy foreign currencies. Changes in the values of the currencies may drive a larger wedge between these prices and costs for some goods market traders, and hence their “arbitrage” profits increase. Other goods market traders will be adversely impacted because their margins will be squeezed by the changes in the values of currencies. The carry trade investors seek to profit from the higher interest rates on foreign securities and also incur transactions costs when they buy foreign currencies.; The market makers are departments of large international banks, and are unique in that they simultaneously quote bid and offer prices; the market makers are the recipients of the transactions costs incurred by the goods market traders and the carry trade investors. a . The surge in the revenues of the banks and other firms that trade currencies has come from the transactions of their proprietary traders.

The paradox is that the increases in the revenues of the firms that trade currencies seem very large relative to the amounts that the outsiders believe that they have put on the table in the form of their share of transactions costs. The revenues of the proprietary traders have surged. In effect they are “front runners” who follow momentum trading strategies; they capture part of the income that is transferred to the countries with the appreciating currencies through the increase in their terms of trade and that otherwise would flow to the outsiders involved in cross border trade and investment. .

The market makers take money off the table virtually every day. The carry trade investors are like the goods market traders and put modest amounts of money on the table when they buy foreign currencies so they can buy foreign securities, which is their “share” of the bid-ask spread. On most days the increase in the domestic values of the securities that they acquire because of the appreciation of the foreign currencies is large relative to their contribution to revenues of the market makers. But when currencies begin to depreciate, the losses of the carry market traders as a group have been very large relative to the additional interest income associated with foreign securities. The transactions of the proprietary traders quicken the pace of the changes in the prices of foreign currencies, and extend the range modestly. But the pace and scope of changes in the prices of currencies primarily is determined by the transactions of the carry trade investors. Various departments of Citibank, Bank of Montreal, Deutsche and other banks are market makers, proprietary traders, and carry market traders at the same time.

The range of movement in the values of currencies in nominal terms has been much larger than inferences about this range based on the claims of the proponents of the 1950s and 1960s; the deviations from the long run average values—overshooting and undershooting—has been much larger than when currencies were pegged. .

The proponents relied on a model of the currency market which led to the conclusion that if a country achieved price level stability, the value of its currency would be stable. Many

countries have achieved price level stability, but the inference from extensive overshooting and undershooting is that the value of currencies have not been stable.

Each country has two targets, one for its price level, another for the value of its currency—but each government has only one instrument, either changes in its discount rate or in the rates of money supply growth. The Tinbergen rule that the number of instruments should match the number of targets has been violated, the model is underdetermined.

The proponents believed that the shocks would be primarily to the values of commodity imports and commodity exports and hence to the values of the trade balance; they gave short shrift to the likelihood that shocks might involved a change in the demand for foreign securities—and when such episodes were noted as in France and some other countries in the 1920s, these events were viewed as aberrations. The proponents slighted the likelihood of shocks that would lead to changes in cross-border money flows and the impact of these flows on the prices of currencies and asset prices and domestic economic activity.

Friedman's claim that changes in the values of currencies would be stable results from his model of the currency market, which has two groups of participants, goods market traders and the market makers. The primary shocks in this model are structural that impact imports and exports. The market makers supply financing to dampen the change in the price of the currency; these cross-border flows of money are responses to imbalances in the trade accounts rather than autonomous events. .

The need for an anchor for the price of the currency does not arise in the model with only goods market traders and market makers. The only shocks in this system are structural; the impact of the shock on the value of the currency is somewhat muted because of induced change in the capital account balance, the market makers buy the domestic currency to dampen its depreciation. (The market makers in this paragraph are like those in the previous section because they are passive and never take the initiative in altering their currency exposures, but they differ from those in the previous section because they carry positions for much longer periods, until the shock is reversed.)

The model favored by the proponents could not accommodate a monetary shock in the form of an increase in the demand of carry trade investors for foreign securities, even though these investors have moved money across borders in search of higher yields for more than three hundred years. The conclusion that speculation is not likely to be destabilizing follows from the assumptions of the model that cannot accommodate the purchase of foreign securities by carry trade investors. Rather than expand the model so that carry trade investors might buy foreign securities, the proponents treated any episodes that involved the purchase of foreign securities as aberrations, attributable to exceptional political or financial disturbances or financial fragility.

If the model advanced by the proponents is expanded to include carry trade investors, their decision to alter the currency composition of the securities in their portfolios leads to a change in the capital account surplus, and the value of the currency must change to ensure that there is a corresponding induced change in its current account deficit. Moreover, the changes in the value of the currency and in asset prices and household wealth induced by the increase in

money inflows and outflows impact domestic prices and employment and growth. If as in the mid-1920s the carry trade investors sell part or all of their French franc positions, the French franc would depreciate and asset prices in France would decline. If as in the early 1990s these investors buy securities denominated in the Thai baht or the Mexican peso, these currencies appreciate and asset prices in these countries increase. The model is the same, regardless of whether the flow of money is to or from a country; the motivation for the change in currency preferences of the carry trade investors is irrelevant.

There is a sharp contrast between the motives for capital flows in the 1920s and 1930s, and the motives in the 1970s and subsequent decades. The motive in the earlier decades was anticipation of inflation or of domestic currency depreciation. The motive in subsequent decades was that the anticipated returns on foreign securities would be higher than on domestic securities.

The model that is the basis of the monetary constitution for the floating currency arrangement might be relevant in the absence of monetary shocks. But since one of the advantages of the floating currency arrangement is monetary independence, the presumption that monetary shocks would not occur seems strange. The model might be relevant if monetary policy is successful in achieving price level stability more or less continuously, but the greater the ease with which investors can move wealth from one currency area to another, the less relevant the model.

The argument between the proponents and their critics was not joined because the proponents focused on structural shocks that would lead to changes in the trade balance, while the critics focused on monetary shocks, and more particularly on changes in the demand for money and securities denominated in different currencies. The critics did not deny the likelihood of structural shocks, but rather felt that they were significantly less important than monetary shocks.

The proponents' belief that the market in currencies is not different from the market in securities and commodities is challenged by the impacts of changes in the cross-border flows of money on asset prices, household wealth, consumption spending, and economic activity. The proponents missed the connection between changes in the cross-border movement of money and changes in prices of the assets in the countries that experienced the increases—and decreases—in these inflows. The increases in these flows provided their own rationale for several years, in that the rates of return on securities increased. But the rates of growth of indebtedness were too rapid to be sustained, and the inevitable decline in the rate of growth of indebtedness often triggered sharp depreciations that in turn led to financial crisis.

(The basic tenet of monetarism is that the demand for money is stable, at least in the long run if not in the short run (remember “long and variable lags”). The international extension of this tenet is that the demand for money denominated in different national currencies is stable, at least in the long run if not in the short run. The monetarists do not appear to have made such a direct assertion, although it seems implicit in their rejection of Nurkse's statement about destabilizing speculation, which in current terminology involves a change in the demand for securities denominated in different currencies. When currencies are floating, a change in the demand for securities denominated in a currency cannot be separated from a change in the

demand for the money in which the securities are denominated. For example, Nurkse was concerned about the impacts of the decline in the demand for securities denominated in the French franc—or what is the same thing, the increase in the demand for securities denominated in the British pound by French residents. Before they could buy the securities denominated in the British pound, they first had to buy the British pound in the currency market (At the technical level, as long as currencies are floating, it is impossible to have a change in demand for securities denominated in different currencies without a concomitant change in the demand for money in these currencies.)

The autonomous increase in the foreign demand for securities in a country impacts the wealth, the rate of growth of GDP, and anticipated rate of return on securities denominated in the country's currency.

(the points in the Aliber study of the European experience was that changes in the demand for securities denominated in these different currencies impacted prices and employment. The depreciation of the franc imposed an expansive or inflationary shock on the French economy; its trade surplus increased and the French prices of tradable goods would increase. The critics would reply that they are interested in the consequences of changes in the demand for securities denominated in different currencies because of the impact of these changes on domestic economic conditions. The appreciation of the British pound in response to the efforts to re-peg the currency at its prewar parity led to a higher level of unemployment. There is a link between changes in speculative demand and changes in domestic economic conditions, even though Friedman could not find one.

The proponents attached great importance to the normative value of monetary independence, and yet they were extremely reluctant to acknowledge the likelihood of monetary shocks when currencies were not anchored to parities. There was an implicit assumption—an act of faith—that if central banks were not constrained by a convertibility requirement, then they would manage monetary policy to achieve price level stability. They failed to recognize the likelihood of external shocks on the economy, and the impact of money inflows and outflows on the value of the currency and the current account balance, domestic income, and employment.

Because the proponents slighted or ignored the possibility that there might be autonomous changes in the demand for foreign securities, they completely ignored that changes in the value of currencies and current account balances would impact domestic prices of assets and domestic employment and how cross border movements of money transmit shocks from one country to others.

For much of the time for most countries, the currency market was stable; changes in the cross-border movements of money did not lead to sharp changes in the prices of currencies and of assets that are characterized as bubbles. Even smaller changes in the values of currencies in response to these movements could disturb competitiveness. The proponents asked whether it was preferable to adjust the economy to the currency or the currency to the country. When currencies are pegged, the economy has to adjust to changes in values of currencies.

. Is a pegged currency arrangement preferable to a floating rate arrangement? Part of the answer depends on the frequency and severity of structural shocks relative to the frequency and severity of monetary shocks? Structural shocks generally lead to smaller deviations from equilibrium values than monetary shocks—but obviously the comparison depends on the assumptions about the severity of the two kinds of shocks. The proponents asked whether it was preferable to adjust the economy to the value of the currency or the value of the currency to the economy; they believed it was less costly to adjust the currency to the country. But because changes in the values of cross border money flows have led to large changes in the values of currency, the economies have had to adjust to sharply different value of the currency.

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