

A Lego Approach to International Monetary Reform

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Abstract The international monetary arrangement that has prevailed for the last 40 years has been a disaster. During four waves of banking crises, with most of the affected countries also experienced currency crises. These crises led to recessions and extended periods of slow growth. Every country that experienced a banking crises previously had a boom and an increase in investor demand for its securities, which led to an increase in prices and usually an increase in currency prices. These booms morphed into banking crises when investment inflows slowed, which often occurred when lenders recognized that the external indebtedness of these countries was increasing at rates too rapid to be sustainable. This pattern in cross border investment inflows is very different from the one advanced by proponents of floating currencies in the 1950s and 1960s. Their articles have become the monetary constitution for the currency arrangement that has prevailed since the early 1970s. They claimed that if currencies were free to float, deviations between the market prices of currencies and the long-run average prices would be smaller because changes in currency prices would track differences in national inflation rates, but instead the deviations have been much larger. They claimed there would be fewer currency rates, but instead there have been many more and most have occurred with a banking crisis. Proponents claimed that each country would be more fully insulated from shocks in its trading partners, instead countries have been pummeled by variability in inflows. The primary objective of international monetary reform is to dampen sharp cross border investment inflows. The Lego-approach to reform involves selections from two menus. One involves the institutional innovations or frameworks for implementing measures to reduce the sharp variability in cross border investment inflows. The more ambitious institutional innovations involve a new institution like the International Monetary Fund (IMF) or a rejuvenation of the IMF. The least ambitious arrangement involves a decision by countries to follow similar policies to dampen the scope for cross border investment inflows.

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Overview

The last 40 years have been the most turbulent in monetary history. There have been more than 30 banking crises, many in one of four waves. Each crisis has resulted from the sharp variability in cross border investment inflows, which has been responsive to the much greater variability in national inflation rates and in national interest rates. The increase in cross border investment inflows to a country has led to an increase in the price of its currency, and to higher prices for its securities, which were an integral part of the adjustment process to ensure that there was an induced increase in the country's current account deficit that corresponded to the autonomous increase in its capital account surplus. The country's currency became increasingly overvalued and led to massive distortions in the relationship between domestic costs of production and costs of production of similar goods in foreign markets.

The increase in the external indebtedness of every country that has had a banking crisis, with the exception of Japan, was too rapid to be sustained. When the lenders became more cautious about extending additional loans to these indebted borrowers, the country's capital account surplus declined, and the prices of both its currency and its securities fell.

The variability in the cross border investment inflows increased sharply with the floating currency arrangement that became the default successor to the Bretton Woods system of adjustable parities in the early 1970s. The change was inevitable given the sharp divergence in national inflation rates in the early 1970s; the maximum inflation rate that was acceptable to Germany and several of its neighbors was too low for the United States. The move to the floating currency arrangement was facilitated by a set of claims about its advantages that had been advanced by Milton Friedman, Harry Johnson, Gottfried Haberler, Egon Sohmen, and several others in the 1950s and the 1960s.

The next section of this paper explains why each of the countries that has had a banking crisis since the early 1980s previously had an economic boom. These booms were a response to the increase in household wealth that resulted because the increase in cross border investment inflows led to higher prices for securities. (The boom in Japan followed from an increase in the price of securities that resulted from a decline in cross border investment outflows.) These booms were an integral part of the adjustment process and ensured that the current account deficits of these countries increased as their capital account surpluses expanded. (Japan experienced a decline in its current account surplus as its capital account deficit fell.) That each of these banking crises followed from the decline in the pace of investment inflows reflects a form of market failure, since the lenders and investors failed to realize that the pace of the cross border investment inflows was too rapid to be sustained, and that a reduction in inflows could lead to a banking crisis and perhaps to a currency crisis.

One section of this paper evaluates the claims of the proponents of floating rates who said that if currencies were not anchored to parities, the deviations between the market prices of currencies and the long run average prices would track the difference in national inflation rates and be smaller than under the adjustable parity arrangement. Another claim was that the central bank in each country would have

greater independence to pursue its own objectives. It would not be diverted from pursuing a more expansive monetary policy because of the concern that its holdings of international reserve assets were too modest. They also suggested that each country would be more fully insulated from shocks in other countries because uncertainty about the prices of currencies would deter cross border investment inflows.

Each of these claims is seriously challenged by the stylized facts about changes in the market prices of currencies, and changes in the impacts of cross border investment inflows on the prices of securities. The floating currency arrangement has been dysfunctional, and the sharp variability in cross border investment inflows has led to a boom and bust cycle and destabilized national economies. The proponents believed that cross border investment inflows would stabilize the changes in the prices of currencies in response to shocks in the goods markets. They ignored the evidence from the 1920s that shocks in the securities markets could lead to changes in cross border investment inflows that could de-stabilize the prices of currencies and the prices of securities in the countries that experienced these highly variable inflows.

Banking crises and currency crises have occurred when currencies have been attached to parities and when countries have been members of a monetary union. These crises are more frequent when currencies are not pegged because a larger number of central banks pursue independent monetary policies and thus changes in the difference in inflation rates and in interest rates are larger than when currencies are attached to parities. Moreover the adjustment process in response to changes in investment inflows is sharply different when currencies are not attached to parities, since this process must ensure that the current account deficit changes as the capital account surplus changes.

This essay presents a Lego-like plan for international monetary reform. The plan suggests several policy targets that a country should adopt and an instrument for achieving each target. The primary target is to minimize the changes in the real price of a country's currency. The country's central bank would buy and sell its own currency to limit the changes in its market price. The central bank should adopt a second target to dampen changes in its holdings of international reserve assets that would result from short term carry-trade cross border investment inflows. The instrument to achieve this target is a variable currency exposure hedging requirement. The implementation of this plan does not require an international agreement or treaty, one country can adopt this plan to ensure that the changes in the market price of its currency track changes in the real price. The larger the number of countries that adopt this plan, the greater global monetary stability.

The Post-1970 International Monetary History

The first of the four waves of banking crises in the last 35 years involved Mexico, Brazil, Argentina, and ten other developing countries in the early 1980s. Japan and two of the Nordic countries, Finland and Sweden, were in the second wave in the early 1990s. Thailand, Malaysia, and the Philippines, and subsequently South Korea were caught up in the third wave that began in July 1997. The crisis in Mexico at the end of 1994 was a prelude to the third wave because the antecedents were similar to

those in the countries on the Pacific Rim. The United States, Britain, Iceland, Ireland and Spain had banking crises in 2008.

Most of these countries with the principal exceptions of Japan, the United States, and Britain had a currency crisis at the same time as their banking crises. They needed financial assistance to avoid defaulting on their indebtedness to foreign lenders. Every country that had a banking crisis had previously had an economic boom, which was associated with an increase in the price of its currency and increases in the prices of real estate and securities. Each of these countries except Japan had previously experienced an increase in cross border investment inflows. Japan experienced an increase in the price of the yen and a decline in net investment outflows, which led to an increase in the supply of domestic credit and contributed to higher prices of securities and real estate.

The quickening in pace of these cross border investment inflows led to significant increases in the market prices of currencies relative to long-run average prices. Then an event led the lenders to become more cautious in extending additional credits to borrowers. The prices of the currencies of indebted countries declined, the prices of securities fell and the banks incurred massive loan losses. Often the banks required large infusions of government money to ensure that depositors would not incur losses.

Recessions followed. Often the recoveries were slow because households increased their savings to rebuild wealth. Similarly the banks were much more cautious lenders, in part because they were rebuilding capital.

That there were banking crises in three or more countries at about the same time reflected that each experienced a decline in cross border investment inflows. Three or four years earlier, each had had a surge in cross border investment inflows. Thus the sharp increase in bank loans to the governments and government-owned firms in Mexico and other developing countries in the 1970s was a response to the surge in the global inflation rate and the anticipated inflation rate, which led to sharp increases in their debt servicing capability. Any event that led to a decline in the anticipated inflation rate would be likely to lead to a slowing in loans to borrowers. Thailand and Sweden experienced sharp increases in the growth of their external indebtedness in response to declines in exchange controls, which no longer prohibited domestic banks from selling more IOUs in foreign centers to obtain funds to increase domestic loans.

This generic view was that the cause of the U.S. banking crisis in 2008 is the variability in cross border investment inflows, which was similar to the cause of the crises in Britain and Iceland at the same time and to the cause of the crises in Thailand and Malaysia in 1997. This view challenges the popular U.S. view that the financial debacle of 2008 resulted from the self-centered transactions of a large cast of “bad actors”, such as Angelo Mozillo, Joseph Cassano, the credit rating agencies, Fred Goodwin, the bank regulators, Sandy Weill, and Northern Rock. The supply of credit available to Americans increased rapidly, and there was an increase in the flow to borrowers who were of doubtful creditworthiness because the prime borrowers had as much credit as they wanted. Some of the lenders wanted to increase their share of the market in mortgage loans and they bought the IOUs of these subprime borrowers. The lenders in the United States and in the other countries that experienced crises were the channels for the distribution of credit and were responding to the surges in the supply of credit that had led to a sharp reduction in their borrowing costs.

The Costs of International Monetary Instability

One of the principal costs of large changes in the market prices of currencies is that there have been large changes in the relationship between costs and prices in one country, and costs for similar goods in its trading partners. During the first half of the 1980s, the price of the U.S. dollar increased by 50 %, and the U.S. industrial economy was “hollowed out” as costs of production in the United States surged relative to costs of similar goods in other industrial countries. Similarly ten years later, the price of the Japanese yen increased by more than 20 %, and the Japanese economy was “hollowed out.” These rapid changes in the real prices of currencies warp international competitiveness.

As the prices of the currencies of one group of countries increased, their trade deficits became larger, and the shares of their tradable goods sectors in their gross domestic products (GDPs) shrank. When the price of the U.S. dollar increased significantly in the second half of the 1990s, employment in the tradable goods sector fell by several million. Between 2003 and 2006, employment in the tradeable goods sector in the United States again declined as the foreign demand for U.S. dollar securities increased. These shifts in the GDP shares of these sectors were reversed after the banking crisis.

In the 1960s, the U.S. trade surplus was 1 to 2 % of U.S. GDP. In the 1980s, the United States developed a trade deficit in response to the increase in the foreign demand for U.S. dollar securities. Because the ratio of profits to sales is low in most industries, small changes in the market prices of currencies relative to the long-run real prices led to large changes in this ratio. Uncertainty about the market prices of currencies deter investments in the tradable goods industries.

The recovery from banking crises and recessions often has been slow because the financial institutions have lost significant amounts of capital as prices of assets and securities declined. Household spending declined as individuals sought to rebuild their financial wealth.

The rate of economic growth in the traditional industrial countries declined significantly in the 1970s and has remained lower than in the previous several decades. Uncertainty about the prices of currencies and the prospective return on investments in tradeable goods production have contributed to this slowdown in the growth rate.

The Source of International Monetary Instability

The source of the large changes in the market prices of currencies and in the real prices of currencies is that investor demand for foreign securities has been highly variable. The caricature is that “money sloshes across national borders.” Bank loans to the governments and to government-owned firms in Mexico, Brazil, and other developing countries surged in the 1970s in response to the increases in commodity prices that in turn led to higher rates of GDP growth. As a result, the bank lenders believed that the governments of these countries would be in stronger positions to repay their loans. Often the increase in investor demand for securities available in a country increased because the banks headquartered in the country sold more of their IOUs in foreign centers so they would be able to increase their domestic loans.

That the price of the country's currency and the price of its securities and real estate have increased together is not a coincidence but instead an integral part of the adjustment process in response to an autonomous increase in the country's capital account surplus. Adjustments within the country were necessary to ensure that there was a counterpart increase in its current account deficit, otherwise the market in currencies would not have cleared. The increase in the price of securities was part of the adjustment process to ensure that its consumption spending and its imports would increase so that the increase in its current account deficit would correspond continuously to the increase in its capital account surplus.

Many countries have experienced sharp increases in real estate prices. When there is a large increase in the flow of credit to a country, much of the money goes into the real estate market, in part because the market for securities associated with real estate almost always is much larger than that of any other asset class. Moreover, these securities usually are collateralized by real property, so that investors feel that the credit risk on these securities is limited. In some cases, the increase in cross border investment inflows has financed the fiscal deficits of governments, which almost always were much larger than the interest payments on their indebtedness.

The external indebtedness of nearly every country that has had a banking crisis has increased more rapidly than the interest payments on its indebtedness, Japan is the principal exception. One of the stylized facts is that when indebtedness increases at a rapid rate, some of the borrowers rely on the money from new loans to pay the interest on outstanding loans. In some cases, the investments financed by the borrowers have not yet become productive. This pattern of cash flows cannot be sustained for more than a few years. At some stage one or several of the lenders become more cautious in extending additional credits, the price of the currency of the indebted country declines, and the price of its securities falls. Whether the decline in the price of securities will lead to a crisis depends on the sharpness of the decline and on the scope of external indebtedness.

The likelihood that each of these several waves of banking crises in the last 30 years is independent of the previous wave seems low. The first wave of banking crises in the early 1980s followed the sharp increase in interest rates on U.S. dollar securities in October 1979, which was a policy response to the "run on the dollar" and the acceleration of the U.S. inflation rate. The surge in interest rates led to financial crises in many developing countries. Their governments had rapidly increased their external indebtedness in the 1970s in the belief that the inflation rates would continue to increase. The investor demand for U.S. dollar securities surged, and by the mid-1980s the price of the U.S. dollar had increased by 50 % from its trough, and was far above a sustainable value. The mirror of the decline in the price of the U.S. dollar in the second half of the 1980s was the increase in the price of the Japanese yen as the cross border investment outflows from Tokyo declined. The prices of Japanese real estate and stocks increased sharply in response to the decline in these outflows. The sharp decline in the prices of real estate and stocks in Japan in the early 1990s was associated with an increase in the price of the Japanese yen, which led to a surge in investment inflows to Thailand and its neighbors. The subsequent banking crises in these countries in Southeast Asia led to a sharp decline in the prices of their currencies and a significant increase in their exports relative to their imports, the counterpart increase in the U.S. capital account surplus was associated with a sharp increase in U.S. stock prices. The pattern is sequential overshooting and then a crisis.

The Promises of the Proponents of Flexible Exchange Rates

The claims of the proponents of flexible rates in the 1950s and the 1960s have become the de facto monetary constitution for the post-Bretton Woods currency arrangement. The most important article is Friedman's classic, "The Case for Flexible Exchange Rates" (Friedman 1953). Each IMF member country can follow the currency arrangement that it prefers following the adoption of the Second Amendment to the Fund's Articles of Agreement in 1978. There is an immense gap between the promises of the proponents and the changes in both cross border investment inflows and the prices of currencies in the last 40 years.

The proponents' criticism of the system of adjustable parities was that there was too little flexibility, because the political leaders delayed the decisions about the changes in parities because they associated high costs with their careers. The proponents questioned whether it is preferable to adjust national price levels and national GDP levels so that the established parities for individual currencies can be maintained, or instead to allow the prices of currencies to adjust to reduce the needed adjustment in price levels and GDP levels. The proponents believed it was preferable to allow the price of a country's currency to decline to correct or adjust to a weakening of its international competitive position.

The proponents also suggested that if a country's currency was not attached to a parity, its central bank would not be constrained from adopting a more expansive monetary policy because it felt that its holding of international reserve assets were too meager, nor would it be required to buy foreign currencies to prevent the price of its currency from increasing. In addition if currencies were freely floating, changes in the prices of currencies would be continuous and hence gradual and the deviations between the market prices of currencies and their long-run average prices would be smaller. Moreover there would be fewer currency crises like those that had become increasingly frequent in the late 1960s. Finally the demand for international reserve assets would be smaller (Macdonald 2007).

Several claims of the proponents were responses to criticisms by Ragnar Nurkse (1944) in his classic book, *International Currency Experience*, which reviewed the changes in the prices of the French franc and of several other currencies in the 1920s. Nurkse wrote "Freely fluctuating exchanges[. . .] create an element of risk which tends to discourage international trade. The risk may be covered by 'hedging' operations where a forward exchange market exists; but such insurance, if obtainable at all, is obtainable at a price and thus adds to the cost of trading." (p. 210) Nurkse also wrote that "[. . .]experience has shown that fluctuating exchanges cannot always be relied on to promote adjustment. Any considerable or continuous movement in the exchange rate is liable to generate anticipations of a further movement in the same direction, thus giving rise to speculative capital transfers of a dis-equilibrating kind tending greatly to accentuate any change that may be required for the balancing of normal transactions." (p. 210) "Stability of exchange rates has proved essential not only for international economic intercourse but for domestic stability as well" (p. 211).

Friedman had several responses to Nurkse's comments about "dis-equilibrating capital flows." One was that "I am very dubious that in fact speculation in foreign exchange would be destabilizing[. . .] People who argue that speculation is generally destabilizing seldom realize this is largely equivalent to saying that speculators lose

money, since speculation can be destabilizing in general only if speculators on average sell when the currency is low in price and buy when it is high.” This reply suggests that Nurkse was concerned about the impacts of these flows on the prices of currencies, whereas instead Nurkse was commenting on the impacts of these flows on the efforts of governments to stabilize their domestic economies (p. 175). Another response was that “Even for the French episode, the evidence given by Nurkse does not justify any firm conclusion. Indeed, so far as it goes, it seems to me clearly less favorable to the conclusion Nurkse draws, that speculation was destabilizing, than to the opposite conclusion, that speculation was stabilizing” (p. 176). A third was that speculation had not been destabilizing in the Canadian dollar in the 1950s or in a number of other currencies. In a submission about a study on speculative transactions at the American Enterprise Institute (AEI) debate with Robert Roosa, he wrote “Aliber studied experience in five countries. [. . .] At bottom, therefore Aliber’s negative conclusions about flexible rate rates rest primarily on the experience of France, and even for France, on a possible but not demonstrated link between speculation and internal policy” (Friedman and Roosa 1967, pp. 106–107).

Then at the Melvin Village conference, Friedman wrote. “In 1950 [. . .] I took seriously the idea that there might be destabilizing speculation[. . .]. There has been an enormous amount of empirical work on this issue. In a debate a couple of years ago with Bob Roosa, I challenged him—and now I challenge Professor Kindleberger and 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 possibility but I know of no empirical evidence that it has occurred even as a special case, let alone as a general rule” (Federal Reserve Bank of Boston 1969, pp. 114–115).

There is a lack of consistency among several of the claims of the proponents. They said that uncertainty about the market prices of currencies would not deter trade and investment because traders and investors could buy forward foreign exchange contracts to hedge their currency exposures. They did not respond meaningfully to Nurkse’s comment that hedging currency exposures incurs costs (Johnson 1970).

The proponents wanted to deflect the criticism that uncertainty about changes in the market prices of currencies would deter trade and investment and hence they wanted the cost of hedging to be low. If these costs were low, then there would be smaller scope for monetary independence, since carry-trade investors could move funds from one financial center to another in response to modest differences in interest rates. Moreover if the costs of hedging were low, then uncertainty about the prices of currencies would have a modest impact in insulating each country from shocks in other countries.

Neither Friedman nor Johnson distinguished systemic uncertainty about changes in monetary policy from transactional uncertainty associated with the commitments that individual traders and investors had made to pay or receive foreign currencies. Systemic uncertainty about the impact of changes in monetary policy and other shocks on the prices of currencies is always present, even if every trader and investor has hedged fully their foreign currency exposures. The larger the systemic uncertainty the higher the cost of hedging. An analogy: every individual who lives on the floodplain may own insurance to reduce exposure to loss from surges in the water level. The cost of this insurance is significantly lower the higher their properties are above the floodplain.

The experience with floating currencies since the early 1970s provides more than 40 years of data about changes in cross border investment flows and changes in the prices of currencies. The deviations between the market prices of currencies and their

long-run average prices have been much larger than when currencies were pegged. Two new terms “overshooting” and “undershooting” describe the relationship between the changes in the market prices of currencies and their long-run average prices. The changes in the prices of some currencies have resembled an amusement park roller coaster ride, in that there is a long extended period when the market price of a country’s currency increased slowly, and then suddenly, the market price tumbled, often by more than 50 %.

The second set of data involves the association between the “long swings” in the market price of a country’s currency and its capital account surplus. For example, between 1980 and 1985, the price of the U.S. dollar increased by 50 % and the ratio of the U.S. capital account surplus to U.S. GDP increased to 5 % of U.S. GDP. Both increases resulted from an increase in investor demand for U.S. securities. These long swings in the market prices of currencies are consistent with Nurkse’s observation that decreases in the price of the French franc in the 1920s led to the anticipation that the price would continue to decline and that similarly subsequent increases in the price of the franc had led to the anticipation that the price would continue to increase.

One explanation for this pattern of overshooting and undershooting is that the adjustment to changes in investor demand for foreign securities is prolonged rather than immediate. A supplementary explanation is that some currency traders follow momentum strategies.

Similar statements can be made about overshooting and undershooting in many other country episodes. The pattern is that as a country’s currency became increasingly overvalued, its trade deficit increased, whereas the conventional explanation is that as a country’s currency became overvalued, its trade deficit should decline. In the former case, an increase in investor demand for the country’s securities led to the increase in the price of its currency and the higher price for the currency led to the larger trade deficit.

A third set of data involves the relationship between the changes in the prices of a country’s currency in the forward market and the prices of its currency in the spot market on the dates that each of the forward exchange contracts matures. The pattern is that the changes in the prices of the currency in the forward market “under-predict” the changes in the prices of the currency in the spot market on the dates that each of the forward exchange contracts matures. There are extended “runs” in the signs of the “forecast errors” between the prices of the currency in the forward market and the prices of the currency in the spot market on the dates that each forward contract matures.

This stylized fact reflects that the price of the currency in the forward market is “pulled in two directions.” The anticipated spot price of the currency on the dates that the forward exchange contracts mature pulls the price of the currency. Investors seek to profit from the difference between the anticipated spot price and the current forward price. Moreover the prices of the forward exchange contracts are pulled by the current spot price of the currency and the interest rate differential. The second pull always is more powerful, which explains why the prices of currencies in the forward exchange contracts under-predict the prices in the spot market on the dates when the forward currency contracts mature.

The implicit assumption of the proponents was that the international money market was “efficient” or “not inefficient,” and that market prices of currencies would change

immediately and fully in response to “new news” so that “no money was left on the table.” Then the prices of forward exchange contracts would be unbiased forecasts of the prices in the spot market on the dates that each forward contract matures, perhaps with a risk premium. The structure of the international money market reflects that the price of the currency in the spot market is an intermediate price that has to clear cross border transactions in securities and transactions in goods at the same time.

The fourth set of data involve the association between the increase in the market price of a country’s currency and the increase in the prices of its securities. If there is an autonomous increase in the capital account surplus of a country, the invisible hands always ensure that there is a counterpart increase in its current account deficit. The economic boom that each country has experienced prior to its banking crisis follows from the increase in the price of its securities and a higher level of household wealth which led to an increase in consumption spending and in its imports.

Unless the country’s current account deficit increases, its capital account surplus cannot increase. The pace of the increase in its current account deficit depends on the speed at which resources shift between its tradable goods sector and its non-tradable goods sector and determines how rapidly its capital account surplus can increase.

The fifth set of data is the dual of the fourth. There is a positive association between the decline in the price of securities in a country and the decline in the price of its currency. There was an upward trend in Iceland’s capital account surplus and an upward trend in the price of the Icelandic krona between 2002 and 2008. But there were interruptions in both trends in 2006 when the capital account surplus declined and the price of the krona declined.

Thus an increase in investor demand for the securities available in a country and then a subsequent decrease led to increases and then decreases in the price of its currency and the price of its securities. Since investor demand for the securities available in a country cannot increase without limit, it will follow that changes in investor demand for foreign securities, say purchases by carry-trade investors, will be destabilizing because the alternative is that the “beanstalk would climb to the sky.”

The banking crisis in Iceland occurred in September 2008. The immediate cause was that the foreign demand for Icelandic securities fizzled, which meant that the Icelandic banks were not able to re-finance maturing loans. Had the foreign demand for these securities suddenly disappeared in March 2005, the price of the Icelandic krona would have declined sharply and the Icelandic krona counterpart of liabilities denominated in the Swiss franc and other foreign currencies would have increased in proportion to the decline in the price of the krona, Iceland then would have had its banking crisis. Some of these borrowers would have defaulted on their bank loans. The increases in the external indebtedness of many other countries have persisted long beyond the dates after which crises were inevitable.

The sixth set of data is that increases in the external indebtedness of these countries while their currencies have been floating often have been larger than the interest payments on their indebtedness, hence the increases in external indebtedness were at rates that were too rapid to be sustained. At some stage the lenders would become more cautious and slow their purchases of the IOUs of the indebted borrowers, because the prices of the borrowers’ currencies would decline, and the prices of their securities would decline.

The seventh set of data involves the variability in the market prices of the U.S. dollar and of other currencies over the last 40 years. The run on the U.S. dollar in the late

1970s contributed to the increase in the U.S. inflation rate and led to the dramatic reversal in the Federal Reserve's policy in October 1979. A massive and unsustainable increase in the U.S. trade deficit followed. The U.S. dollar became greatly overvalued and U.S. external indebtedness increased at a rate that was too rapid to be sustained. The decline in the Japanese demand for U.S. dollar securities in the second half of the 1980s led to an increase in the price of the Japanese yen and contributed to the surge in the prices of property and stocks in Japan. The increase in the price of the Japanese yen as the prices of real estate and stocks declined in the early 1990s led to a surge in investment flows to Thailand and its neighbors that was too rapid to be sustained. The pattern is that prices of currencies vary extensively around long-run average prices.

There have been more currency crises when currencies have been floating, and each has involved a surge in uncertainty about the ability of the indebted borrowers to adhere to their contracts on liabilities denominated in a foreign currency. Most countries except Japan, the United States, and Britain have had banking crises at the same time as they had currency crises.

Pathologists learn a great deal about the human body from "extreme cases." Similarly the study of chaotic episodes in financial markets provide insights about the adjustment processes in response to different shocks. Nurkse had developed valuable insights about the process of price determination in the market for currencies in the immediate post First World War monetary environment as governments sought to return to price level stability after massive episodes of inflationary finance. The German and the Austrian-Hungarian empires were shattered. Germany had to pay large reparations. National borders were rearranged, and there were many new countries. Governments had fragile support. Friedman disparaged Nurkse's insights about changes in the prices of currencies. He wrote, "Nurkse's discussion of the effects of speculation is thoroughly unsatisfactory. At times, he seems he seems to regard any transactions which threaten the existing value of a currency as destabilizing even if underlying forces would produce a changed value in the absence of speculation. [. . .] It is a sorry reflection on the scientific basis for generally held economic beliefs that Nurkse's analysis is so often cite as 'the' basis or 'proof' of the destabilizing speculation" (Friedman 1953, p.176).

Friedman's response was a red-herring that took the form of a cliché "that destabilizing speculation would be unprofitable" rather than a positive statement that showed why Nurkse's statement that speculative transactions had complicated the initiatives toward a more stable economic environment was erroneous. Returning to Friedman's high school debating team stunt at Melvin Village, "Let me turn to what I regard as probably the most important single issue involved in the argument for and against flexible rates. It is the issue brought up by Charlie when he asserted that the essential case for fixed rates and against flexible rates is that there is less exchange risk under fixed rates[. . .] In respect of this argument, I feel this is one of those continuous movies, and this is where I came in 20 years ago. [. . .] In a debate a couple of years ago with Bob Roosa, I challenged him[. . .]" (Friedman 1953, p. 114).

Friedman's statement confuses two issues that Nurkse had distinguished in his book. One is the micro issue of exchange risk and the scope of uncertainty about the market prices of currencies when exchange rates are pegged and when they are floating, and the other is the macro issue of whether there are "dis-equilibrating capital flows" when currencies are not attached to parities. The challenge that Friedman made initially to

Roosa and then to Parsons and Kindleberger to provide some evidence that such consequences flow from flexible rates indicates that he did not understand how the market in currencies clears. The key issue is the nature of the shock that leads to an increase in investor demand for foreign securities. If the speculative demand for foreign securities increases in response to a goods market shock, their purchases will be stabilizing and dampen the range of movement in the price of the foreign currency. If the speculative demand increases in response to a securities market shock, their purchases will amplify the range of movement in the price of the foreign currency and be destabilizing.

The frequency of goods market shocks and of securities market shocks is an empirical issue, and will vary with the monetary environment. Friedman's challenge that others will not be able to find examples of destabilizing speculation implies that investor demand for foreign securities will not change, even though the anticipated inflation rates and interest rates change. The issue is not whether speculation in the market for currencies will be stabilizing or destabilizing when currencies are floating, but instead how frequently they will be stabilizing and how frequently they will be destabilizing, and the comparisons of the benefits of stabilizing speculative transactions and the costs of destabilizing transactions.

The choice between an adjustable parity arrangement and a floating currency arrangement depends on the frequency of structural shocks and of monetary shocks under both currency arrangements, and the costs of adjustments to each type of shock. The number and severity of structural shocks appears unlikely to be affected by the currency regime. There will be many more monetary shocks when currencies are floating. The benefits of adjusting to structural shocks with a floating currency arrangement should be compared with the costs of adjusting to monetary shocks.

The proponents failed to recognize that once central banks were no longer committed to parities for their currencies, the average inflation rate would be higher and the variability in inflation rates and interest rates would be higher. As a result, investors would have a greater incentive to buy more foreign securities in response to changes in the relationship between the interest rate differential and the anticipated changes in the prices of foreign currencies.

Most or all of the proponents had a strong commitment to free markets. They did not want governments to "rig" the prices of currencies. They implicitly assumed that the market in currencies was "efficient" or "not inefficient." (The attention to market efficiency developed in the mid-1960s.) They believed that the market in currencies did not differ significantly from the markets for stocks and bonds, and they did not recognize the uniqueness of the market in currencies as a "intermediate" market between the markets in domestic and foreign securities and the markets in domestic and foreign goods. They believed that changes in investor demand for foreign securities might dampen the changes in the prices of currencies in response to goods market shocks. The primary reason that the data provide so little support for the claims of the proponents is that they assumed that the shocks would be primarily in the goods market. They ignored the likelihood and severity of monetary shocks in the form of changes in investor demand for foreign securities.

The aficionados of floating currencies and free markets often have responded to the criticism of floating rates with the observations that there have been banking crises

when currencies have been attached to parities, and even when countries are parts of the monetary union. The banking crises under each of these arrangements often have followed from a sharp decline in cross border investment inflows.

The large gap between the claims of the proponents and the data on the changes in the prices of currencies and cross border investment inflows might reflect that the proponents were so convinced of the advantages of free markets that the inconsistencies among their claims did not seem important. A competing interpretation was that they were unaware of the inconsistencies.

The currency market arrangements remain dysfunctional because the global financial establishment has failed to recognize that the case for flexible exchange rates is intellectually bankrupt. Thus the proponents of floating currencies claimed that once currencies were no longer anchored to parities, each central bank would be able to follow the monetary policy that it deemed appropriate for its domestic objectives, but they failed to recognize the implications of changes in interest rates for investor demand for foreign securities. They implicitly assumed that investor demand for foreign securities is constant in response to monetary shocks. It is as if they believed that changes in the prices of currencies would be stable under the assumption that investor demand for foreign securities is constant.

The Objective of International Monetary Reform

The primary objective of international monetary reform is to adopt a set of institutional innovations that would ensure that there are minimal changes in the real price of a country's currency in response to monetary shocks. If the country has a higher inflation rate than its trading partners, the market price of its currency would decline to ensure that the real price of its currency does not increase or change significantly.

If the real price of a country's currency changes because of differences in productivity, then the market price would change to ensure that the target value for the country's current account balance is achieved. In this case the real price of the country's currency would change to reduce large changes in its current account balance when the country has achieved its current account target.

The criticism of the Bretton Woods arrangement of adjustable parities was that there was too little flexibility in response to differences in inflation rates and in productivity. The institutional arrangements for changing the prices of currencies made too much of a "big deal" out of changes in the prices of currencies; those in charge were afraid of the adverse political fallout from both a reduction in the parity for their currency and even from an increase in the price of their currency. A great deal of importance was attached to discrete changes in the prices of their currencies, perhaps because they often were 10 % or more.

One advantage of the floating currency area arrangement was that changes in the prices of currencies were de-politicized, because they were determined by "market forces." Occasionally a political leader could talk up or talk down the price of its country's currency. The flip side of this advantage was that investor demand for the securities available in a country could change suddenly, perhaps in response to political developments.

One promise of the proponents of floating rates was that, once currencies were no longer linked to parities, changes in the real prices of currencies because of monetary shocks would be minimal. The sharp changes in the market prices of currencies that resulted from changes in investor demand for foreign currencies led to costs to economic stability that overwhelmed the advantage that would result if the market prices of currencies tracked differences in inflation rates.

Targets, Instruments and International Monetary Reform

An imbalance between the number of targets and instruments is the source of the problem of attaining international monetary stability both when a country's currency is floating and when it is attached to a parity. This imbalance is highlighted by reviewing the policy choices for the Bank of England in 2005 and 2006. The increase in investor demand for securities denominated in the British pound and for London real estate led to an increase in the price of the pound. There was a boom in the British economy and the inflation rate increased. The dilemma for the Bank of England was that if it increased interest rates to dampen the domestic boom, the foreign demand for securities denominated in the British pound would increase, and the price of the pound would increase. If instead the interest rates were reduced to dampen the investment inflow, real estate prices would increase. One target was the price of the pound. Other targets were domestic employment and the inflation rate. The only instrument was the Bank's discount rate.

The mismatch between targets and instruments has appeared elsewhere. The "trilemma" was that a country could not at the same time have an independent monetary policy, a parity for its currency, and freedom from controls on cross border investment flows. If its central bank reduced its discount rate, investors would buy more foreign securities, and its holdings of international reserve assets would be exhausted. The implication was that if the country allowed its currency to float, the number of targets would decline relative to the number of instruments. This conclusion is unwarranted, since it implies that a country should be indifferent about the price of its currency and about the variability in this price.

The mismatch between targets and instruments appears with the assignment problem, which involves changes in the mix of monetary policy and fiscal policy to achieve both the country's employment target and the target value for its payments balance. If a country is at full employment and its payments deficit is too large, the prescription is that the country should adopt a more expansive fiscal policy and a more contractive monetary policy. The impacts on domestic employment would be offsetting so its economy would remain at full employment. Both policies would lead to higher interest rates. The capital account surplus would increase and the payments deficit would decline. The country would secure the desired improvement in its current account balance, but the implication is that the country would be indifferent about its fiscal balance and the pace of the increase in government indebtedness, which seems unlikely. The implication is that the authorities in each country need an additional policy instrument. Then monetary policy could focus on the domestic target and the new policy instrument on the external target.

The Primary Target and the Primary Instrument

The primary target for a country is a market price for its currency that would ensure that the changes in the real price of its currency are minimal, especially in response to monetary and other transient shocks. The central bank would estimate the market price for its currency that would lead to a target value for its current account balance at full employment and then announce this price. A country might choose to have a target for the ratio of its current account surplus to its GDP of 2 % or perhaps 3 %. The instrument for achieving this target is central bank purchases and sales of its own currency in terms of one or several foreign currencies or a basket of foreign currencies.

If the inflation rate is higher in one country than in its trading partners, the achievement of the primary target would involve a decline in the market price of its currency to minimize the change in the real price. If there is a sharp structural change such as a large increase in productivity, then the primary target would be modified and both the market price and the real price of the currency would be changed.

The instrument for the achievement of the primary target is central bank purchases and sales of one foreign currency or several or a basket of foreign currencies at the prices that would keep the real price of the currency within a narrow range. The central bank might set an upper support limit 3 % higher than the target for its central price. The central bank would sell more of its own currency to prevent the price from increasing above this price. The central bank might set the lower support limit 3 % below the target for its central price. The central bank might buy and sell its own currency within these support limits. The central bank would seek to change its central price and its support limits by modest amounts. The changes might be announced weekly or biweekly. If the central bank finds that it is selling a significant amount of its own currency at the upper support limit at a time when it concludes that the real price of its currency has not changed significantly, then it would begin to manage the second instrument to reduce the sales of its currency at this price.

The Second Target and the Second Instrument

The second target for a country is to moderate the sales and purchases of its own currency in response to changes in the cross border investment inflows of carry-trade investors as they seek to profit from differences in interest rates and the anticipated changes in the prices of foreign currencies. Consider the benefits and the costs of the carry-trade transactions. The benefits of the carry-trade transactions are largely private and are available because the international money market is not efficient. These benefits accrue to individuals and firms that change the currency composition of the securities in their portfolios to profit from the difference in interest rates on similar securities denominated in the domestic and foreign currencies and the anticipated changes in the prices of foreign currencies. The social costs of the carry-trade transactions are the distortions that occur when changes in these transactions led to changes in the market prices of currencies relative to the long-run average prices of the currencies. There are no social benefits from carry-trade transactions.

The policy community has given a lot of attention in the last several years to “macro prudential regulation” as an approach toward insulating the economies

from another financial crisis. The phrase is like a large umbrella or tent, and includes higher bank capital requirements, limitations on some of the securities that the banks can buy, and “living wills.” Some in the policy community have been captured by the phrase “too big to fail.” They do not want to be in the position of using public money to save private institutions, even though the U.S. experience of 2008 was that the U.S. government was a successful and profitable vulture investor. Citibank and Bank of American failed and they remained open with government capital.

A second set of macro-prudential regulations seeks to constrain short-term cross border investment inflows. The broad heading is exchange controls. Some countries have adopted minimum holding periods. Others have applied reserve requirements.

One desirable feature of the second instrument is that it can be implemented in stages, and is more nearly like a rheostat than like a toggle switch. A second is that domestic and foreign residents are treated in the identical fashion. A third is investors with long positions and firms with short positions are treated in the identical way. A fourth is that the use of the new instrument introduces minimal distortions to the domestic economy.

One second instrument is a variable hedging requirement for investors and for firms who change the currency composition of the securities in their portfolios to profit from the interest rate differentials, and the anticipated changes in the prices of foreign currencies. If the central bank concludes that it is required to buy more foreign currencies to prevent the price of its currency from increasing, it announces that all subsequent buyers of its currency verify that they have hedged 20, 50, or 80 % of the changes in their exposures. This hedging requirement would be applied uniformly, regardless of the identity of the investor, business activity, or passport.

Initially the currency hedging requirement would be activated when the central bank observes that changes in its holdings of international reserve assets are large relative to the changes from its anticipated current account balance. The central bank could then require that investors that are involved in non-trade related transactions hedge 50 %, 100 % or 125 % of their purchases of foreign securities. In effect, these groups change the currency composition of the securities in their portfolios by buying and selling the foreign currency in a transaction with banks.

Implementing the Lego Plan for International Monetary Reform

One of the corner approaches toward international monetary reform is represented by the negotiations that led to the Articles of Agreement of the International Monetary Fund in July 1944. More than 300 individuals from 44 countries met for three weeks at the Mt. Washington Hotel in Bretton Woods, New Hampshire. The participating countries signed a treaty, and each returned to its national capital and obtained parliamentary approval. This conference followed several previous conferences.

The thrust of the treaty was to constrain the choices of individual countries about changing the price of its currency. Each had to obtain the approval of the Fund if the proposed change was more than 10 % from its initial parity. The treaty also provided for

commitments to transfer credit from one or several countries through the IMF to one or several other countries.

The gold standard was another corner solution toward international monetary reform. An individual country decided it was in its own self-interest to establish parity for its currency in terms of gold which would “fix” the price of its currency in terms of the prices of the currencies of other countries that had gold parities. Countries accepted the constraints because of perceived benefits, including the ability to borrow in international markets at lower cost and reduced costs for international payments. Individual countries pegged their currencies to gold at different times.

An individual country can enhance the stability in its domestic economy by adopting a primary target and instrument and a second target and instrument. The initiative of a country to adopt primary and secondary targets is not likely to have adverse impacts on its trading partners. (The adoption of a primary target for the price of a country’s currency might have an adverse impact on its trading partners if it is likely to lead to a large current account surplus.)

Once one country has adopted this proposal, other countries might follow its initiative. The country might set the same values for its support limits or it might set wider or narrower support limits. The larger the number of countries that adopt this proposal, the greater the increase in economic stability.

The thrust of the current proposal that each country adopt a primary target and primary instrument and a secondary target and secondary instrument is defensive. Each country will seek to limit the ability of the carry-trade investors to cause the market price of its currency to differ significantly from the long-run real price.

Conclusion

The extraordinary turbulence in the global economy since the move to floating currencies in the early 1970s has resulted from the large variability in cross border investment inflows. The move to floating currencies was the default successor to the adjustable parity arrangement in a world characterized by accelerating inflation, and a difference between the United States and Germany on the maximum acceptable inflation rate. This move was facilitated by a persuasive set of arguments advanced by Friedman, Johnson, and others about the advantages of a floating rate arrangement.

The incentives for investors to shift funds from one financial center to another became much greater when currencies were no longer attached to parities, since changes in central bank monetary policies led to greater variability in both national inflation rates and in interest rates on similar securities denominated in different currencies. An increase in investor demand for foreign securities has led to an increase in both their price and the price of the foreign currency. The increase in the price of securities was an integral part of the adjustment process to ensure that the country developed an induced increase in its current account deficit that corresponded to the autonomous increase in its capital account surplus.

The increases in the external indebtedness of each of these countries were too rapid to be sustained. At some stage it was inevitable that the lenders would slow their purchases of the borrowers’ IOUs, and then the prices of securities and the prices of currencies would decline. Often banking crises would follow.

The pattern of changes in cross border investment inflows and in the market prices of currencies has been very different from the pattern suggested by the proponents of floating currencies. They had suggested that once currencies were no longer anchored to parities, changes in the market prices of currencies would track differences in inflation rates. Instead deviations between the market prices of currencies and long-run average prices have been much greater. Proponents suggested that uncertainty about the prices of currencies would deter cross border investment inflows and countries would be more fully insulated from shocks in other countries. Instead the variability in cross border investment inflows has led to economic booms and busts and several waves of banking crises.

The key assumption of the proponents was that the shocks that would lead to changes in the market prices of currencies would occur in the goods market. They slighted or ignored the likelihood that shocks in the securities markets would lead to changes in investor demand for foreign securities. One of the normative objectives of the proponents was monetary independence. Each central bank should be able to change its discount rate and the rate of money supply growth without the constraint of a commitment to a parity. A change in monetary policy would lead to a change in interest rates and in the differential between the foreign and domestic interest rates, unless the change in the interest rate differential fully and immediately offset a change in the anticipated change in the price of foreign currencies, a very unlikely occurrence in the short run. Otherwise investors would have had an incentive to increase their purchases of foreign securities.

Each of the claims of the proponents about the advantages of a floating currency arrangement is based on the assumption that investor demand for foreign securities is a constant and will not change, despite the changes in monetary policy and in the differential between foreign and domestic interest rates. The assumption is implicit. It is if the proponents believed monetary independence was important and that, even though changes in central bank monetary policy could lead to changes in interest rates, inflation rates, and the differentials between these rates, investor demand for foreign securities would not change.

The dysfunctional behavior of the floating currency arrangement reflects that the case for floating rates is intellectually bankrupt and based on a pipedream assumption that investor demand for foreign securities would be a constant despite changes in differentials in inflation rates and interest rates. The costs of the large changes in the market prices of currencies relative to their long-run average prices have been high, and resource allocation is less efficient on a global basis. Investment and employment in the tradable goods sectors increase when the real price of a country's currency declines and shrink when it increases. Uncertainty about the stability of profit rates almost certainly has deterred investment. The major beneficiaries have been the large banks that trade money.

This essay presented a Lego-plan for international monetary reform. The primary objective of this plan is that an individual country should seek to minimize the changes in the real price of its currency, especially in response to monetary shocks and large changes in investor demand for its securities associated with the carry trade. The primary instrument for achieving this objective is that the central bank buys and sells its currency in terms of some other currency or a basket of other currencies at prices modestly different from a central price or reference price. This central or reference price

would change when the domestic inflation rate changes relative to the inflation rates in the country's trading partners. The changes in the central rate should be modest in amount and as frequent as needed. The central banks would adopt a second instrument to dampen the rewards from carry-trade transactions by requiring that these investors hedge part or all of their currency exposures.

This plan for monetary reform can be adopted by an individual country. There is no need for an international treaty or agreement. Each country is then responsible for its own economic welfare. The larger the number of countries that seek the limit the changes in the real price of their currencies, the larger the gain in global economic welfare.

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