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International Monetary Relations: Taking Finance Seriously

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The architecture of the international monetary and financial system is a major determinant of how close the world economy can come to realizing its potential, and how serious are the risks of crisis and disruption. In this essay, we particularly want to highlight the interactions of the international monetary system with financial conditions, and not just with the output, inflation, and balance of payments goals that have been central to most accounts.

A basic constraint on the design of all international monetary systems is the *monetary policy trilemma*: a country can enjoy two of the following three features simultaneously, but not all three: exchange-rate stability, freedom of cross-border payments, and a primary orientation of monetary policy toward domestic goals (for example, Keynes 1930, chap. 36; Padoa-Schioppa 1988; Obstfeld and Taylor 1998, 2004; for a brief intellectual history, see Irwin 2011). For more than a century, efforts to cope with the monetary trilemma have varied across time and space, with mixed success. For example, the gold standard of the late 19th and early 20th centuries implied fixed exchange rates because all gold-standard central banks fixed their currencies' values in terms of gold. Coupled with international capital mobility, however, the gold standard meant that autonomous monetary policy was infeasible. Conversely, the Bretton Woods system that operated from the end of World War II

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into the early 1970s mandated fixed exchange rates but, for as long as international capital mobility was blocked, countries could, to some degree, use monetary policy for domestic goals. In recent decades, many advanced economies have moved to a system of floating exchange rates: in the context of the monetary trilemma, their tradeoff was to sacrifice fixed exchange rates in order to allow both international capital mobility and a monetary policy geared toward domestic objectives.

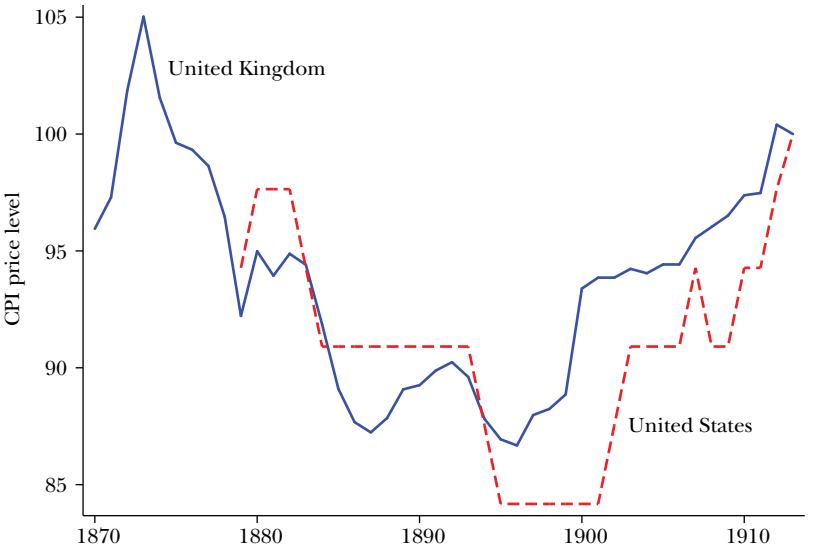
While the monetary trilemma is a useful organizing principle for categorizing different choices about international monetary systems, we need to be clear that it does not imply that one choice is the best, much less that any choice can solve all economic problems or insulate an economy fully from foreign financial disturbances. In this essay, we review how financial conditions and outright financial crises have posed difficulties for each of the main international monetary systems in the last 150 years or so: the gold standard, the interwar period, the Bretton Woods system, and the current system of floating exchange rates. We will argue that the Bretton Woods agreement of 1944 addressed only a limited set of issues, those most relevant after the traumatic transformations of the Great Depression and World War II, which included a marked retrenchment in national and international financial market activities. However, a broader set of financial stability challenges was not addressed at Bretton Woods. Always latent, these dangers had periodically exploded into central importance in the world economy from the 1870s to the 1930s—and, despite a long period in abeyance after World War II, they would gradually take on increasing importance as the postwar decades passed. Indeed, considering the distinct policy challenges in this dimension, a *financial trilemma* has been proposed to complement the better-known monetary trilemma: specifically, countries must choose among national sovereignty over financial stability policy, integration into global financial markets, or financial stability—but they cannot have all three (Schoenmaker 2013).

Our essay will rest on the argument that—even as the world economy has evolved and sentiments have shifted among widely different policy regimes—three fundamental challenges for any international monetary and financial system have remained. How should exchange rates between national currencies be determined? How can countries with balance of payments deficits reduce these without sharply contracting their economies and with minimal risk of possible negative spillovers abroad? How can the international system ensure that countries have access to an adequate supply of international liquidity—financial resources generally acceptable to foreigners in all circumstances? In concluding, we evaluate how the current international monetary system answers these questions.

The Bretton Woods Regime and Its Contradictions

The slide into World War II led to effective financial autarky for many countries. The immediate postwar years then saw widespread tightening of government's grips over banks and financial markets (Cassis 2011, pp. 108–9). More generally, *laissez faire* ideology was in retreat (Polanyi 1944), and unregulated financial markets drew special

Figure 1
Price Levels under the Gold Standard, United Kingdom 1870–1913 and United States 1870–1913



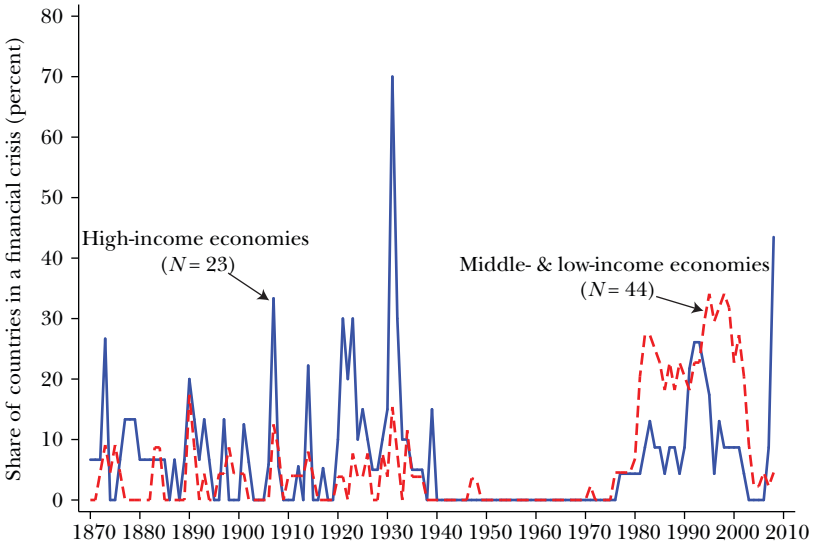
Source: Data from Jordà, Schularick, and Taylor (forthcoming) Macrofinancial Database.

opprobrium, as they were widely perceived to have failed. The underlying premise of the 1944 Bretton Woods conference was that neither the classical gold standard nor the successor arrangements during the interwar period had worked well.

Historical Context: The Gold Standard

Under the pre-1914 gold standard, the monetary trilemma was resolved in favor of exchange stability and freedom of foreign transactions. While these features did tend to promote an expansion of trade and international lending, the system severely limited the role monetary policy could potentially play in macroeconomic stabilization. Short-term interest rates in different countries tracked each other relatively closely (Obstfeld, Shambaugh, and Taylor 2005). At the same time, longer-term inflation trends were shared across countries and tied to supply and demand forces in the global gold market. Thus, price levels under the gold standard sometimes underwent long periods of decline or increase as shown in Figure 1, generally falling from about 1880 to 1895 in the face of limited gold supplies, then rising through 1914 in response to gold discoveries in the Yukon and South Africa. These long swings in prices could cause tensions, both economic and political, and countries had to cope with unanticipated redistributions between paper debtors and creditors. Notably, the stability of banks and the financial system was not assured by gold convertibility of currency, as evidenced by the 19th century history of banking

Figure 2
Financial Crises, 1870–Present



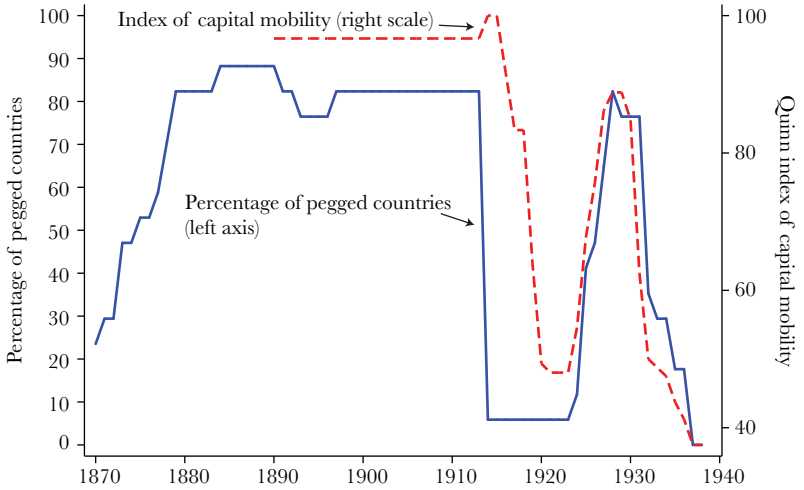
Source: Data from Qian, Reinhart, and Rogoff (2011).

crises both in the United States (Jalil 2015) and elsewhere.[1] Figure 2 shows the pattern of financial crises affecting advanced economies since 1870.

Around the same time as the Panic of 1873, to focus on one prominent episode of financial crisis, Bagehot's (1873) *Lombard Street* famously laid out the Bank of England's role as the financial markets' *lender of last resort* (although this role had been described earlier by Thornton in his 1802 masterpiece, *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*). Bagehot's advice was that a central bank during a financial panic should lend freely against good collateral. But how could the central bank increase the money supply in this way while simultaneously maintaining its currency's parity with gold? When confronted with both a banking and a currency crisis, Bagehot (1873) viewed maintaining the gold standard as the priority: "We must look first to the foreign drain, and raise the rate of interest as high as may be necessary. Unless you stop the foreign export you cannot allay the domestic alarm" (pp. 27–28). Bagehot's argument amounted to the assertion that monetary policy could be deployed to stem a banking panic independent of the exchange-rate constraint, which might be true in certain special circumstances, but more broadly serves to illustrate how some resolutions of the monetary trilemma could simultaneously exacerbate financial instability.[2] In another episode, in 1907

[1] For overviews of the macroeconomics of the pre–World War I gold standard, useful starting points are Cooper (1982), Bordo and Schwartz (1984), and Eichengreen (2008, chap. 2).
[2] See Laidler (2003) on the contrasting views of Bagehot and Thornton regarding the relative importance of internal versus external stability.

Figure 3
Pegging to Gold and Capital Mobility, 1870–1938



Source: Data from Jordà, Schularick, and Taylor (forthcoming) Macrofinancial Database; Quinn, Schindler, and Toyoda (2011).

the Bank of England, alarmed by gold outflows that financed overheating financial markets in the United States, abruptly hiked its target interest rate, helping to set off the devastating panic of 1907.

Though the 1873 and 1907 episodes are among the better-known ones, they are merely two of the many severe systemic banking crises and accompanying severe recessions, sometimes occurring at once in several countries, that punctuated the gold standard era. Indeed, the panic of 1873, which afflicted Europe as well as North America, helped inspire the founding of the German Reichsbank in 1876, while the US panic of 1907, against the backdrop of periodic liquidity tensions in the US banking system, led to the founding of the US Federal Reserve.

Historical Context: The Interwar Period

World War I surpassed previous wars not only in its scope and destructiveness, but also in the extent to which economic relationships between nations broke down. That breakdown was in part a result of direct government actions, including widespread suspension of the gold standard and, significantly, pervasive official control over external payments, a huge contrast to the previous era's *laissez faire*. Looking back, Keynes, who had served in the UK Treasury during the war, said, "Complete control was so much against the spirit of the age, that I doubt it ever occurred to any of us that it was possible" (as cited in Obstfeld and Taylor 2004, p. 146). Governments had opened Pandora's box.

Figure 3 illustrates the pattern that followed. The 1920s saw various attempts by governments to remove exchange control and return to gold: only about 10 percent

of currencies were still pegged to gold in the early 1920s, but by the end of the 1920s, 80 percent were again pegged to gold, and capital mobility was once more widespread. In the subsequent Great Depression, most countries abandoned the gold standard and imposed harsh capital controls (Obstfeld and Taylor 2004, pp. 136–40).

The story of the Great Depression from a US perspective is well known. The US economy succumbed to macroeconomic and financial shocks as US government policy failed to react effectively. Waves of banking crises followed, a pattern seen in many countries around the world in the 1930s, as reflected in Figure 2 presented earlier. The Federal Reserve failed to do much as a lender of last resort, despite having been founded to fill that role (Hetzel and Richardson 2016). Thus, various historians have attributed the depth of the Great Depression in the US to Federal Reserve incompetence (Friedman and Schwartz 1963; Hsieh and Romer 2006), or a collapse of credit (Mishkin 1978; Bernanke 1983; Bernanke and James 1991), or both. Taken together, these arguments indicate the importance of both traditional macroeconomic and financial factors.

However, the economic and financial crisis of the Great Depression also occurred within an international context, driven in part by problems that arose from the global attempt to return to the gold standard (Temin 1989; Eichengreen 1992). The United Kingdom returned to gold in 1925, but at the prewar sterling–gold parity, despite a significantly higher postwar price level compared with 1913. France returned in 1926, but could tolerate doing so only at a much-depreciated exchange rate between the franc and gold. These fateful decisions ensured that for many years the deflated British economy would struggle with a strong currency, high unemployment, and gold losses (Keynes 1925); in contrast, reflated France enjoyed a weak currency and a gold surplus (Hamilton 1988; Irwin 2012–2013). Contradicting textbook stories about price-specie-flow adjustment, these outcomes highlighted the real-world asymmetry between deficit countries, who were pressured by balance of payments outflows, and surplus countries, who faced no corresponding pressure to reduce their external imbalances.

The United States, which had remained on gold throughout World War I and after, was by the late 1920s experiencing a massive stock market boom that attracted substantial gold inflows from abroad (Kindleberger 1973 [2013]). US credit tightening compounded the inflow, and countries throughout the world raised interest rates as they competed to retain gold. This purposeful competition for gold ultimately proved deflationary, and escape came slowly. Britain abandoned the gold standard in 1931. Other countries followed. Instability in global banking played an important role in driving speculative capital flows (Borio, James, and Shin 2014). In the US economy, the first signs of economic stabilization occurred only in spring 1933, when President Roosevelt also suspended the US dollar's gold link. The end of tight money stopped the collapse of price levels and nurtured hesitant recoveries in countries that depreciated (Eichengreen and Sachs 1985; Campa 1990; Bernanke and Carey 1996; Obstfeld and Taylor 1998).

From the perspective of this essay, two lasting legacies of this period are worth emphasizing. One was a fear of "beggar-thy-neighbor" policies, a phrase originally due to Adam Smith,[3] but now widely linked with the Depression era. Countries tried in several ways to bottle in domestic demand at the expense of their trading partners, including high tariff walls and strict exchange controls. Competitive currency depreciation was also often held up as a poster child in this policy class, its typical goal being to switch demand between countries (for example, League of Nations 1944). As Eichengreen and Sachs (1985) pointed out, however, simultaneous competitive monetary expansion in a group of countries where each one is trying to depreciate, even if it leaves their currencies' mutual exchange rates unchanged, could be a better equilibrium if all are battling deflation and unemployment.

The other major legacy was that the financial instability of the interwar period left governments much less willing to tolerate free-wheeling financial markets. In the United States in 1933, for example, this new mindset begat the Glass–Steagall act, which prohibited commercial banks from engaging in investment-banking activities; the creation of the Federal Deposit Insurance Corporation, to oversee a new system of deposit insurance; new and broad regulatory powers for the Federal Reserve; and Regulation Q, which imposed interest-rate ceilings to discourage banks from competing for deposits. The Securities Exchange Act of 1934 and the Banking Act of 1935 soon followed.

On economic policy, doctrinal change was swift and dramatic. Macroeconomic policy was seen to have been badly wrong. By the 1940s, new thinking, as represented by Keynes and his followers, was the order of the day. There would be no rush to restore either a gold standard or unregulated financial markets, as there had been after World War I. As Cassis (2011) describes it, the turbulent years from 1914 to 1945 "led to an ideological shift which, combined with a generational change, favored state intervention and a more organized form of capitalism" (p. 109). This was the ascendant worldview as international negotiators gathered at Bretton Woods, New Hampshire, in July 1944 to design the postwar international monetary and financial order.

The Bretton Woods Approach and the Creation of the IMF

Post–World War II reconstruction offered an opportunity to construct a new international monetary system. Ruggie (1982) painted the contrast between earlier attitudes and the new postwar vision of this system: "[U]nlike the economic nationalism of the thirties, it would be multilateral in character; unlike the liberalism of

[3]Smith (1776) wrote in *The Wealth of Nations* (Book IV, Chapter III): "[N]ations have been taught that their interest consisted in beggaring all their neighbours. Each nation has been made to look with an invidious eye upon the prosperity of all the nations with which it trades, and to consider their gain as its own loss. Commerce, which ought naturally to be, among nations, as among individuals, a bond of union and friendship, has become the most fertile source of discord and animosity." Any similarity with current political discourse is not in the least coincidental.

the gold standard and free trade, its multilateralism would be predicated upon domestic interventionism."

Under the system designed at Bretton Woods in 1944, exchange rates were fixed, with every country pegging to the US dollar (and thereby stabilizing the $N-1$ exchange rates among the N currencies), while the United States was supposed to peg the dollar price of gold (an arrangement that formally applied mainly to its transactions with official foreign dollar holders, and thus gave the US in practice an asymmetrically central position with disproportionate power over global monetary conditions). Unlike the euro-area monetary union of recent times, the Bretton Woods system mandated no external constraints on government budgets, allowing fiscal policy to be used more freely as a tool of macro stabilization.

With the recognition that countries with fixed exchange rates might run short of international reserves, the International Monetary Fund was created as an emergency lender. Countries also had the capacity, subject to IMF approval, to devalue or revalue their currencies in circumstances of "fundamental disequilibrium"—a term nowhere defined in the IMF's Articles of Agreement. The basic idea was that countries running *persistent* balance of payments deficits should not be forced to maintain what appeared to be an unsustainably strong exchange rate through employment-reducing monetary contraction, fiscal austerity, or both. Rather, as Keynes put it in defending the plan before the British Parliament, the value of the currency would adjust to the economy's needs, not the reverse.

Of course, in oxymoronic fashion, "fixed but adjustable" exchange parities do face the frequent drawback that markets can often see the changes coming—or imagine that they will come—and in those cases, speculative capital flows (self-fulfilling or anticipatory) can disrupt any pretense of deliberate and consultative exchange-rate adjustment. The problem was well understood from the interwar experience, but the risks were mitigated when the IMF opened its doors in 1946: pervasive capital and exchange controls remained and domestic financial systems were broadly constrained and repressed, greatly reducing crisis risk and limiting speculative responses to possible exchange parity changes.[4] Nor did the IMF's Articles have as a goal any process of capital-control liberalization. Indeed, Article VI, Section 1(a), discouraged members from using IMF resources to finance sustained capital flight, and also allowed the IMF to request a member to impose outflow controls in such cases. Article VI, Section 3, explicitly stated, "Members may exercise such controls as are necessary to regulate international capital movements," subject to some restrictions. Deviations from frictionless capital mobility, to greater of lesser extent, then gave national authorities scope to manage domestic interest rates notwithstanding fixed exchange rates.

In sum, by eliminating capital mobility, the Bretton Woods system set up a resolution of the monetary trilemma based on exchange-rate stability and a degree of autonomy of monetary policy. Long-run inflation trends would be determined *de facto*

[4]The exception that proved the rule was Britain in 1947, where a premature return to free sterling convertibility quickly ended in a balance of payments crisis and a return to capital controls.

by US monetary policy (mediated by the nature of the dollar's link to gold); but *in extremis*, countries could also adjust currency values. IMF funding was meant to ensure that such adjustments would occur only in response to highly persistent shocks.

The IMF's Articles did not explicitly address financial market stability. But in the absence of extensive private international capital flows, each country had a free hand to regulate its financial sector. With memories of the 1930s still fresh, an inclination for tight regulation, coupled with relatively uncomplicated financial systems, made the Bretton Woods period up to about 1970 almost crisis-free compared with the decades that preceded and followed it. Figure 2 illustrates how singular that interlude was.

These postwar choices mirrored deeper economic objectives. According to the first of its Articles of Agreement, two of the IMF's original main purposes are to "facilitate the expansion and balanced growth of international trade" and "to assist in the establishment of a multilateral system of payments in respect of current transactions between members and in the elimination of foreign exchange restrictions which hamper the growth of world trade." Through the start of the 1960s, these goals seemed to have been well realized—supported also by the Marshall Plan after World War II, five tariff reduction rounds under the GATT, falling international transport costs, as well as the European Payments Union and a range of other European integration initiatives. International trade did recover, but weaknesses in the Bretton Woods architecture were lurking.

Weaknesses Emerge in the Bretton Woods Architecture

First, stability of the Bretton Woods fixed exchange rates was predicated on continuing limited cross-border capital mobility. Policymakers struggled with financial plumbing, trying to open the pipes for payments on current transactions to support the rebirth of global trade but close the valves for speculative capital transactions that could destabilize the system. However, one result of the Bretton Woods system's successes was that the opportunity for capital flows inevitably grew and unwanted leakages increasingly seeped through. Fixed exchange rates therefore became harder to maintain. As early as 1961, the German and Dutch currencies were revalued in the face of large capital inflows. This episode was a harbinger of much bigger eruptions later in the 1960s, notably the devaluations by Britain and several others in November 1967.

Second, and parallel with the increased exchange-rate instability implied by greater capital mobility, was a phenomenon that remains central to financial-stability policy to this day: the migration of financial activity to less-regulated venues, both through the location of banking activity offshore and domestic financial innovation. In the 1960s, US banks were constrained by the Depression-era Regulation Q from competing for deposits onshore; but moving offshore—notably to London, where they could operate essentially free of regulation—allowed them to circumvent the rule. In addition, the 1963 Interest Equalization Tax, intended to strengthen the US balance of payments by taxing capital outflows, gave multinational firms an incentive to borrow dollars from foreign banks and issue dollar bonds abroad. Eurodollar and

eurodollar-bond markets arose in London, ultimately helping London to become the world's pre-eminent financial center. Because of the Regulation Q interest-rate ceilings, mounting US inflation also implied that the real interest rates banks could offer savers were becoming increasingly negative. As financial activity moved to commercial paper markets and new money-market mutual funds, pressures for bank deregulation grew in the United States as well as in other industrial countries.[5]

A third weakness in the Bretton Woods system centered on international liquidity. Governments around the world were accumulating US dollars to hold as international reserves, while the United States had promised to redeem foreign official dollars at a price of $35 per ounce. All would be well as long as the Americans held enough gold, but as Triffin (1960) pointed out, redemption would become increasingly problematic as global dollar reserves in foreign hands continued to grow. In 1960, foreign US dollar reserves overtook the value of US gold holdings and speculators began to push up gold's price in the London market, which raised the possibility that the United States (like the Bank of England in the 1930s), might have trouble meeting official demands to convert its currency into gold.

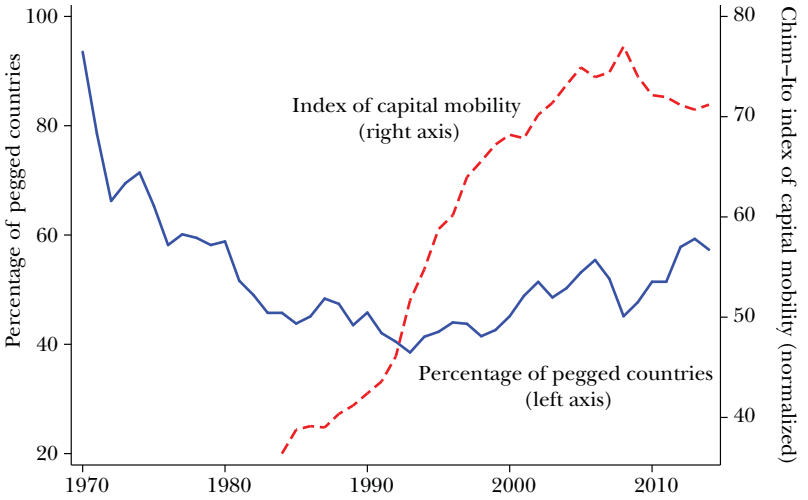
US inflation began to rise in the latter 1960s. The supposed link of the US dollar to gold had weakened significantly over time, causing a problem for countries pegged to the dollar as they faced pressure to import inflation from the United States. At the same time, analysts and markets began to believe that the US dollar was overvalued and in need of depreciation. The resulting capital flows into currencies like Germany's mark, Japan's yen, and Switzerland's franc exacerbated the inflationary pressures those countries faced, as their central banks had to buy dollars to keep their exchange rates pegged, in the process increasing their international reserve holdings and money supplies, as well as their exposure to any action by the United States to increase the dollar price of gold. Triffin's feared imbalance became ever-more acute. Although Germany would revalue in October 1969 and Japan in July 1967, the pressures continued.

More academic economists began to echo the early calls by Friedman (1953) and Meade (1955) for floating exchange rates, arguing that market-determined rates would tend to eliminate external payments imbalances while insulating countries from foreign inflationary shocks. Their basic argument was that routine exchange-rate flexibility allows all countries to move to a preferred resolution of the trilemma—as compared with the situation of much more constrained policymaking that they then faced. As Johnson (1969, p. 18) put it: "Flexible rates would allow each country to pursue the mixture of unemployment and price trend objectives it prefers, consistent with international equilibrium, equilibrium being secured by appreciation of the currencies of 'price stability' countries relative to the currencies of 'full employment' countries."

By March 1973, after several attempts by the industrial countries to shore up fixed exchange rates, further co-operation proved impossible. Generalized floating

[5] Dagher (2016) discusses the political economy of deregulation following crises.

Figure 4
Fixed Exchange Rates and Capital Mobility, 1970–Present



Notes: Data from Shambaugh (2004) coding and Chinn and Ito (2006) database.

exchange rates emerged as a stopgap measure in the face of continuing speculative attacks. What was at the time intended as a temporary retreat has now lasted more than four decades.

Floating Exchange Rates: Monetary Independence and Financial Instability

The monetary trilemma implies that, with the imperative of exchange rate stability gone, countries in the 1970s could orient monetary policy toward domestic goals while still allowing additional freedom of capital movements across borders. In the decades since 1973, both exchange-rate flexibility and capital mobility have increased, but the process has not been smooth or consistent around the world. The United States financial account was already reasonably unrestricted at the start of the 1970s. European countries like Germany and Switzerland had imposed some inflow capital controls earlier, but could now dismantle them, whereas other European countries and Japan retained heavier controls through the late 1970s (Britain) or even up to the late 1980s (Bakker 1996; Abdelal 2007). As shown in Figure 4, the share of countries with pegged exchange rates fell dramatically from about 90 percent in 1970 to about 40 percent by the 1980s. But since then, the share of countries with pegged currencies has crept up over time to more than half. Conversely, the level of capital mobility was still relatively low in the mid-1980s, but then rose dramatically into the early 2000s, before leveling off and even declining during the last decade or so.

Although it was clearly feasible for countries to liberalize capital accounts once they had abandoned exchange rate pegs, it was not obvious that such a choice would be desirable, and outcomes have not been uniform. Many countries kept some form of pegged exchange rates, most of them emerging economies and developing countries, but also notably many European countries that established their own fixed exchange rate system in the 1970s, a precursor of the euro. In recent years, more countries have chosen to limit capital flows, notably after the 2008 global crisis. Volatility in exchange rates, in international capital flows, or in both can bring risks of financial and economic instability, as economic history has shown.

The Promise and Reality of Free International Capital Flows

In the 1970s, economists who made the case for capital account liberalization tended to stress the upside, emphasizing, for example, the negative effects of capital-control regimes that enabled governments to use financial repression to protect the domestic markets for their debts (McKinnon 1973; Shaw 1973). Moreover, capital controls became harder to enforce in the 1970s as domestic financial institutions developed and trade expanded further. The growing political clout of financial-sector interests also pushed in the direction of deregulation. More recently, Rajan and Zingales (2003) have suggested a narrative in which financial openness drives domestic liberalization by allowing greater competition in the financial sector and eroding the politically powerful interests that inhibit domestic reform to protect their rents.

However, the literature making the case for opening the capital account also often emphasized a desirable sequence of events, which began with liberalizing competition and establishing prudential regulation in domestic financial markets, and only then moving to openness to international capital flows. In their survey of the liberalization experience of 34 developing and advanced economies between 1973 and 1996, Williamson and Mahar (1998) found that, while most "liberalized the capital account gradually—after financial liberalization had occurred—in accord with the prevailing policy recommendation" (p. 31), "[f]ew countries seem to have heeded the advice to precede financial liberalization with the introduction of a system of prudential supervision, staffed by supervisors who have a high degree of independence of the political authorities" (p. 29). The piecemeal natures of some liberalizations contributed to later financial instability in some cases. Moreover, in the 1970s and 1980s, the accepted wisdom often did not emphasize interactions between opening the capital account and the need for considerable exchange rate flexibility.

The doctrinal shift regarding capital mobility seen in advanced economies in the 1970s and 1980s began to spread globally in the 1990s. By September 1997, the IMF's management was proposing that the Fund's executive board amend the Articles of Agreement to give the Fund an explicit role in guiding countries toward more open capital accounts. To be clear, the proposal was *not* advocating an indiscriminate rush toward opening; indeed, it recognized the role of capital inflows in financial crises, such as those that had afflicted Latin America from the mid-1970s through the mid-1990s, and it therefore explicitly sanctioned gradualism, based on

country circumstances (Fischer 1997). But it took as a given that an open capital account was the desirable ending point for all countries.

However, the 1997–98 financial crisis that rocked countries across East Asia marked an inflection point in economists' thinking about the merits of international capital mobility. With the Latin American debt crisis of the 1980s, one could make an argument that macroeconomic policymaking in those countries had been unsound, that their growth prospects had been overstated, and that they were prone to structural rigidities—a seemingly sufficient explanation for why their overborrowing came to grief. But the emerging economies of East Asia, without such apparent macroeconomic flaws, had seemed to provide shining examples of mostly well-run economies with rapid economic growth. These economies featured at least partially open capital accounts, which allowed for substantial inflows of foreign capital. They also had heavily managed exchange rates. These economies experienced what became known as a "sudden stop," when foreign (and often, domestic) capital fled these countries. The result was a drop in exchange rates, which made it impossible to repay dollar-denominated debt, triggering a meltdown of their financial markets and banking systems—financial dynamics for which there actually was ample precedent in the earlier Latin American crises (Díaz Alejandro 1985; Kaminsky and Reinhart 1999).

After the East Asian crisis, it became commonplace for economists (and the IMF) to recommend floating for such emerging and liberalizing economies (Fischer 2003). But in addition, the certitude that freeing the capital account should be a long-term goal for all countries fell by the wayside. Since then, there has been considerable rethinking of the doctrine as well as an accumulation of empirical evidence on capital account liberalization (for example, Ostry et al. 2010; Ocampo 2015). The International Monetary Fund (2012) published a new "institutional view" on capital controls, which sanctioned their use in some circumstances.

The Promise and Reality of Floating Exchange Rates

Early advocates of floating exchange rates like Friedman and Johnson clearly oversold the extent to which they could facilitate trade while still insulating a domestic economy from international shocks. They erred in part because, in their times, they had no immediate experience with the types of global financial shocks that have become more prevalent. Indeed, as shown earlier in Figure 4, a substantial number of countries have been unwilling to allow their currencies to float freely, and the prevalence of pegged currencies has exceeded half in the last decade or so. Presumably, those who peg their currencies believe that this choice will facilitate trade and protect their economy from macro-financial shocks caused by large exchange rate fluctuations, the essence of "fear of floating" (Calvo and Reinhart 2002).

Even early in the floating rate era, the new risks to financial stability were apparent. In June 1974, German regulators closed a small bank, the Bankhaus I. D. Herstatt, which had taken large foreign exchange positions far in excess of its capital. Later that year, the Franklin National Bank of New York also closed after foreign exchange losses. Interestingly, the Federal Reserve had to borrow from

European central banks to help Franklin National meet its obligations, a direction of funding that would be reversed when the Fed lent dollars to foreign central banks during the global financial crisis of the late 2000s.

But flexible exchange rates have their advantages, too. As noted a moment ago, the consequences of the "sudden stop" of capital inflows in the East Asian financial crises of 1997–98 was made worse because exchange rates had been heavily managed, and domestic banks and other financial institutions were unhedged and unprepared for a dramatic swing in exchange rates. In addition, as the monetary trilemma suggests, floating exchange rates empower domestically oriented monetary policy, while providing a shock absorber against external macroeconomic shocks.

For most countries around the world, one of the most potent external macroeconomic shocks involves changes in policy by the US Federal Reserve. Early work by Jay Shambaugh, and the three of us together, examined the empirical correlation between short-term and policy interest rates in home countries versus in "base" countries like the United States in modern times (Obstfeld, Shambaugh, and Taylor 2004, 2005; Shambaugh 2004). We looked at whether the bilateral exchange rate regime between the home and the base country in a given time period was a float or a peg, and whether the capital account was largely open or closed. In our panel data, for the home-base pairs and periods studied—covering advanced and emerging economies, and spanning epochs from the pre–World War I gold standard era to the post–Bretton Woods era of today—the clear result was that pegs with open capital accounts had much higher (and more statistically significant) interest rate correlations between them than did either floating exchange rates or pegs with closed capital accounts, which is consistent with what the monetary trilemma would predict. Other work on international transmission of interest rates has confirmed these findings, with a range of studies finding bigger responses of short-term interest rates for pegs versus floats.[6]

To what extent does the decoupling of short-term interest rates that floating allows carry over to macroeconomic outcomes? Probably the most important macroeconomic outcome variable is aggregate output, and di Giovanni and Shambaugh (2008) found evidence that when the home economy has an open capital account and a peg, it tends to experience a real GDP growth slowdown when its base country tightens monetary policy, whereas when the home country has a floating exchange rate or a peg with a closed capital account, such an effect is weak or nonexistent. This finding indicates a macroeconomic buffering role for floating exchange rates.

One recent branch of the research literature argues that the choice of exchange regime may not matter. Indeed, Rey (2013, 2016) suggests that the monetary trilemma may now have been transformed into a dilemma, writing that "*cross-border flows and leverage of global institutions transmit monetary conditions globally, even under floating exchange-rate regimes*" (Rey 2013, p. 310, emphasis in original).

[6]For example, see Borensztein, Zettelmeyer, and Philippon (2001); Frankel, Schmukler, and Servén (2004); Miniane and Rogers (2007); di Giovanni and Shambaugh (2008); Klein and Shambaugh (2015); Obstfeld (2015); Caceres, Carrière-Swallow, and Gruss (2016); Ricci and Shi (2016).

In this view, the key choice is between domestic control over monetary policy and openness to international capital flows, and the choice of exchange rate regime plays at most a secondary role. We agree that floating exchange rates do not offer a complete buffer against transmission of all international financial and monetary shocks. For example, Miranda-Agrippino and Rey (2015), Passari and Rey (2015), and Rey (2013, 2016) show that even in major, advanced, floating-rate economies there appears to be significant spillover from US interest rates, to the global financial cycle, to domestic macroeconomic, and to financial conditions. However, when faced with external shocks, countries with floating exchange rates still have a shock absorber that countries that peg exchange rates lack and thus can achieve preferred policy outcomes even if they cannot achieve full insulation of their economies (Obstfeld 2015). In this sense, more flexible exchange rates do provide a degree of differential insulation from external monetary shocks, as the monetary policy trilemma predicts. Adding further weight to this argument, Obstfeld, Ostry, and Qureshi (2017) document that in emerging markets, which are most vulnerable to external forces, global changes in risk sentiment have less effect on most domestic financial variables when the exchange rate regime is a free or managed float.

International Financial Stability and the Financial Trilemma

The classic monetary policy trilemma emphasizes that the combination of floating exchange rates and capital mobility will empower monetary policy to focus on domestic objectives. However, the monetary trilemma does not speak directly to financial stability concerns. Indeed, monetary policy alone may be a relatively ineffective tool for addressing potential financial stability problems. In this case, exposure to global financial shocks and cycles, perhaps the result of monetary or other developments in the industrial-country financial markets, may overwhelm countries even when their exchange rates are flexible. If this outcome is a risk, countries may desire some combination of financial regulations or restrictions on international capital mobility to shield their economies more fully.[7]

Concerns about the need for international coordination of bank regulation emerged almost immediately after the collapse of the Bretton Woods arrangements. The first meeting of the Basel Committee on Banking Supervision was held in February 1975. Since then, this group has worked to apportion regulatory authority among national supervisors to avoid gaps in oversight; to promote informational exchanges; and to regularize international best practice in regulation, including standards for capital. There have been three successive initiatives on bank capital and other regulations starting in 1988. The Basel Committee has expanded over time and has drawn emerging markets into its orbit. Supplementing the work of the Basel Committee, and housed along with it at the Bank for International Settlements, is the Financial Stability Board, which originated in 1999 as the Financial Stability Forum and monitors the broader international financial system. The

[7]This is the core argument that Rey (2013, 2016) makes; and on global financial cycles, see also Borio and Disyatat (2015), Avdjiev, McCauley, and Shin (2016), and Reinhart, Reinhart, and Trebesch (2016).

work of the Financial Stability Board has become ever more important as "shadow banking" has grown up alongside more traditional banking, as the range of financially systemic and globally active institutions has expanded, and as the complexity of financial markets and the instruments traded in them has grown.

The growing efforts of international regulators to coordinate on financial oversight have been mirrored in the rise to prominence of the *financial trilemma* (Schoenmaker 2013), which is distinct from the monetary policy trilemma discussed above. In the financial trilemma, countries must choose between national financial policies, integration into global financial markets, or financial stability. For example, if there is widespread integration into global financial markets and each nation retains national sovereignty over financial policies, then regulatory arbitrage among jurisdictions may undermine financial stability (for some evidence on arbitrage channels, see Aiyar, Calomiris, and Wieladek 2014; Bayoumi 2017; Cerutti, Claessens, and Laeven 2017). Alternatively, a country with national financial rules may enhance financial stability by cutting off integration into global markets. However, most countries have been willing effectively to surrender a certain amount of sovereignty over financial regulation in the hope of keeping access to international capital markets while maintaining financial stability. While the financial trilemma obviously applies to currency zones with integrated payments systems like the euro area, it also applies to countries that maintain their own floating currencies.

Because of the *financial* trilemma, moreover, domestic monetary policy, under an open capital account and a floating exchange rate, even if more autonomous than under a pegged exchange rate, will likely face a harsher tradeoff between conventional macroeconomic goals (inflation, output) and financial stability (Obstfeld 2015). Thus, the burden on domestic financial stability policy will accordingly be even greater. Macroprudential policies must bear some of the load, and in the face of certain kinds of shocks, some forms of capital controls could appear desirable as well, as argued, for example, by Blanchard (2016).

The European Example: Pegged or Stable Exchange Rates and Financial Fragility

The nations of western Europe have charted a hybrid path for monetary institutions in the post–Bretton Woods era. After the early 1970s breakdown of fixed rates, the members of what was at the time called the European Economic Community (EEC) moved to limit currency fluctuations within their group. Indeed, as early as 1969 these countries were already contemplating the Werner Plan for ultimately moving to a common currency. By 1979, an important subset of EEC members pegged their mutual exchange rates in what was known as the European Monetary System. The resulting exchange rate mechanism ended up functioning much like a miniature Bretton Woods system—with periodic crises and exchange rate parity adjustments, only now with Germany as the center country. In line with the trilemma, some members, including France and Italy, maintained capital controls.

By the end of the 1980s, as was later codified in the Maastricht Treaty of 1991, momentum built for the move toward so-called *economic* and *monetary union*. Concretely, the former meant a single market concept under which capital controls

had to disappear; the latter meant that fixed exchange rates became the overriding objective of national monetary policies, as a stepping stone to the common currency. The future members of the euro area thus embraced the vertex of the monetary policy trilemma based on capital mobility and exchange-rate stability vis-à-vis each other, but with jointly floating exchange rates against outside currencies. Abdelal (2007) offers an insightful treatment of the European attitude toward capital controls, and its impact on global practice more generally.

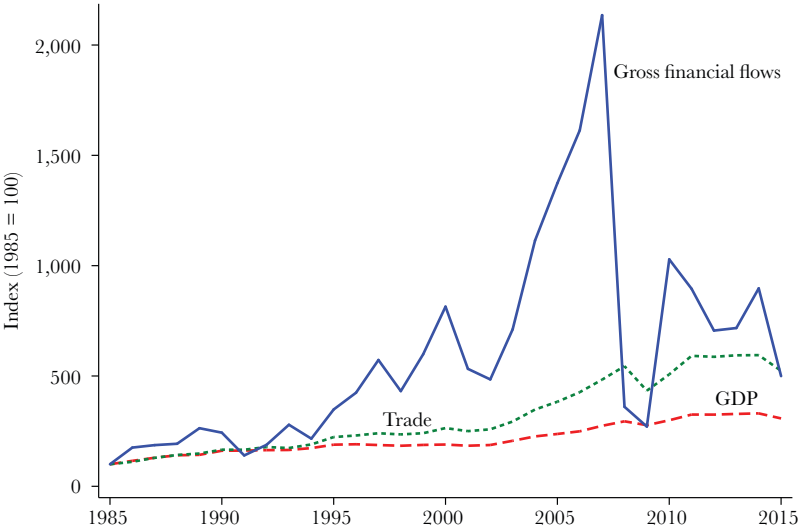
However, just as the earlier Bretton Woods treaty had neglected financial stability concerns, the Maastricht Treaty of 1991 setting up the European economic and monetary union likewise turned a blind eye to financial stability (as opposed to macroeconomic) issues, in a different setting and for different reasons, but with considerable destabilizing effects later. There was no mechanism built into the euro to address a situation in which some countries ran continuous and large trade surpluses while others ran large and continuous deficits. There was no common framework of prudential banking and financial regulation, much less any pooling of bank failure risk (for example, deposit insurance). And, as became evident in subsequent euro area crises, banks and governments could even run out of liquidity despite the single currency, amplifying financial stability risks. Unlike the 1950s and 1960s, when a quite repressive global financial environment ensured that the neglect of these issues under Bretton Woods would not prove too costly, the disregard for financial stability in the euro architecture in a time of rampant financialization would prove to be a painful oversight.

Old Problems in New Guises

The causes of the global financial crisis of 2007–2008 have been much debated. The financial boom that preceded the crash of 2007–2008 was a global phenomenon. Bernanke (2005) argued that the world economy was experiencing a global saving glut, driven primarily by China and the former crisis countries of East Asia, distributing ample liquidity worldwide and pushing up real estate prices in many countries, not just the United States. But this emphasis on *net* capital flows from countries with surpluses of saving over investment obscured another prominent feature of the period, the sharp rise in *gross* capital (largely bank-related) flows between countries that helped to prepare the ground for the subsequent crash (Bernanke, Bertaut, DeMarco, and Kamin 2011; Lane 2012; Borio, James, and Shin 2014). Figure 5 illustrates the behavior of these flows leading up to the financial crisis and after.

Despite having exchange-rate flexibility as a potential brake, some countries were unable to head off the resulting amplification of financial instability coming through open capital markets. Within the euro area, with no exchange rates at all to adjust, cross-border capital flows from core to periphery played a major destabilizing role, notably in the credit booms of Ireland and Spain (Lane 2013; Hale and Obstfeld 2016). Moreover, as advanced economies turned to ultra-loose monetary

Figure 5
Evolution of Real Gross Capital Flows Compared with Output and Trade, 1985–2015



Source: IMF World Economic Outlook and International Financial Statistics databases.
Notes: Indices are calculated from data in real US dollars (deflated using US GDP deflator). Global trade is defined as the average of global exports and imports of goods and services. Gross global financial flows are defined as the sum of direct investment, portfolio investment, and other investments. Values are obtained by averaging inflows and outflows to account for measurement error.

policies in the wake of the financial crisis, some emerging markets, while having loosened the rigidity of their exchange rates after the Asian crisis, still found that lower global interest rates and capital inflows were making it harder for them to maintain financial and price stability. The central macroeconomic challenges of exchange rate regime choice, external payments adjustment, and international liquidity have clearly remained over time, although they have manifested themselves in different forms given the evolution of financial markets.

How Should Exchange Rates Be Determined?

A number of countries have continued to use some form of pegged exchange rates, as shown earlier in Figure 4. However, the monetary trilemma, coupled with widespread financial integration, has made it much harder—or even impossible, for most countries—to maintain completely firm currency pegs, given the imperatives of domestically oriented monetary policy. At the national level, as we have seen, floating exchange rates clearly cannot provide insulation against all global financial or real shocks. But floating still does facilitate some measure of domestic insulation, and policymakers can provide additional shock absorbers by deploying effective financial and macroprudential policies, by adopting sound fiscal and structural policies, and even by using measures to limit capital flow in some circumstances.

But while floating or soft peg exchange rates have helped mitigate policymakers' domestic challenges, debate has continued over whether floating is a suitable solution for the international system as a whole. While floating exchange rates can allow individual countries to stabilize to a degree, they also raise the age-old problem of competitive currency depreciations, in which demand is just being shifted between countries. Central bankers faced with this "currency war" critique also typically respond that while monetary expansion and lower interest rates within a country indeed do depreciate the domestic currency and make foreign goods relatively more expensive, the lower domestic interest rates also bring about a win-win rise in domestic demand (via the interest rate channel) that spills over positively abroad. This argument may appear to lose traction in today's economy where major central bank policy interest rates have settled near their effective lower bounds.[8] But the arrival at that unpleasant floor is a result of other factors, notably the conjunction of low real rates and current inflation targets, and not a mark against conventional policy in normal times per se.

Low global real interest rates, however, reflect the balance between global saving and global investment, and for each individual country, its current account surplus equals the excess of its saving over its investment. These facts raise the concern that some economies may be boosting their economies through higher trade surpluses, pushing global real interest rates down and making monetary stabilization more difficult for all.

How Should Balance of Payments Adjustments Occur?

Countries with large trade deficits, experiencing an inflow of foreign investment capital, face the threat of "sudden stop," and therefore have some incentives to limit their external imbalance. On the other hand, there is no such market-based incentive to limit trade surpluses. In a world where high balance-of-payments surpluses persist for certain countries, net external wealth positions become increasingly divergent. Creditors' external wealth becomes ever more positive, and debtors' becomes ever more negative, with debtor efforts to fend off deflation only prolonging the process. When economies that have been experiencing large and sustained current account deficits eventually are forced to adjust spending abruptly when their perceived intertemporal budget constraints shift, as is often the case, the result can be national or even international recession and crisis.

In some cases, one country's higher trade surplus may come directly at the expense of employment and price stability abroad (Caballero, Farhi, and Gourinchas 2015; Eggertsson, Mehrotra, Singh, and Summers 2016). The problem is less serious when countries can deploy monetary or other policies to offset deflationary impulses from abroad (Blanchard and Milesi-Ferretti 2012). For an economy at the

[8] Mishra and Rajan (2016) suggest that the unconventional monetary policies employed at the effective lower bound for monetary policy interest rates may in some cases work primarily by shifting aggregate demand from other countries, rather than stimulating interest-sensitive expenditure components at home, and that policies which are globally zero sum should be avoided.

effective lower bound of the policy interest rate, however, monetary policy alone cannot easily offset a foreign deflationary impulse; moreover, a fiscal policy response may be constrained as well by fears (justified or not) over pre-existing high levels of public debt.

The problems that arise when some countries run sustained and large trade imbalances have been well-understood by economists since at least the interwar years, but this issue has repeatedly proven intractable to global macroeconomic policy solutions. International cooperation is at a much more evolved stage with respect to trade policy (the World Trade Organization with its rules and oversight) and in financial regulatory policy (the Basel process and the Financial Stability Board), and is even advancing in international tax policy. One reason may be that the gains from those other modes of cooperation potentially accrue simultaneously to all parties. However, the identities of countries with large trade surpluses tend to be fairly persistent over time, giving them less incentive to submit to rules or suasion today in the expectation that someday they may be running deficits. Another reason may be that economists and policymakers have, rightly or wrongly, more precise expectations about the nature and effects of trade, regulatory, and tax instruments, compared with macroeconomic policy tools.

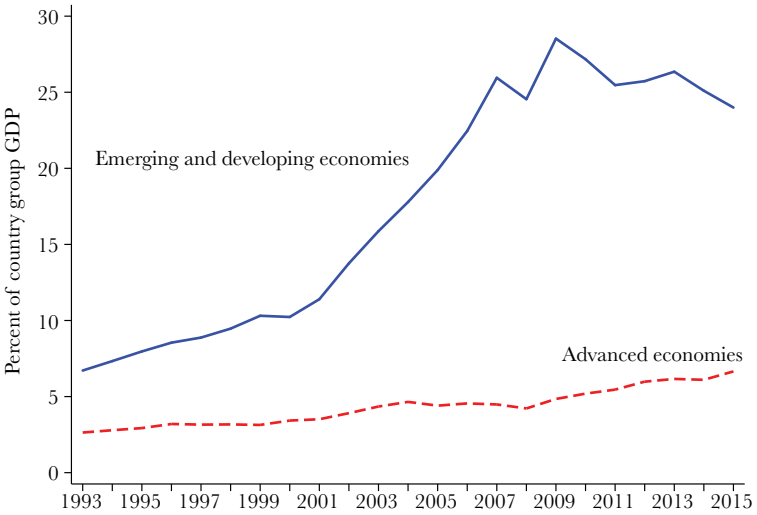
How Can Countries Have Access to Adequate International Liquidity?

Under the Bretton Woods system, countries held foreign exchange reserves (mostly in US dollar assets) to peg their exchange rates. Accordingly, the advent of floating exchange rates led many economists to predict that central banks would reduce their demands for reserves. As in the last few decades, aside from the role that reserves play in foreign exchange intervention, they can also play a potential role in buffering balance of payments shocks when other means of external financing become expensive or unavailable, for example, in a sudden stop. Here as well, the development of international capital markets after the early 1970s led some to predict that expanded opportunities for foreign borrowing would reduce the role of reserves.

Such predictions have been wildly wrong, as we can see from Figure 6. Advanced-country reserves remain significant relative to GDP, rising from about 3 percent of GDP in 1993 for these countries as a group, to more than 5 percent of GDP by 2015. However, the reserves held by emerging and developing countries have risen sharply, rising from about 7 percent of the GDP of this group of countries in 1993 to about 25 percent of their GDP by 2007—and remaining roughly at that level since then (based on IMF data).

Emerging and developing economies have raised their reserve holdings for two main reasons. First, even though their exchange rates have generally become more flexible in the last few decades, they continue to intervene in foreign exchange markets. In some cases, the goal has been to temper currency volatility (Calvo and Reinhart 2002); in others, to maintain or enhance export competitiveness—motivations that in practice can overlap. Second, more open international capital markets have *raised* the precautionary demand for reserves, not reduced it. For emerging

Figure 6
Stocks of International Reserves, 1993–2015



Sources: IMF International Financial Statistics database for reserve data (which include gold valued using national methods); IMF World Economic Outlook database for GDP data.
Note: The "advanced" group excludes Hong Kong, South Korea, Singapore, and Taiwan but includes the Czech Republic, Estonia, Slovenia, and the Slovak Republic.

market economies, larger balance-sheet liabilities, some denominated in foreign currencies and at short term, imply a greater risk of capital-flow reversal: not only might financing for a current account deficit disappear in a sudden stop, but foreign creditors could also call for the repayment of gross liabilities. In addition, domestic investors might seek to rebalance portfolios towards foreign assets, via capital flight towards perceived safe havens. The magnitudes of these gross flows can greatly exceed those of net flows, and these risks increase the utility of foreign exchange reserves to help domestic financial institutions as well as importers make payments abroad, while minimizing the risks of possible spillovers to domestic banks (Obstfeld, Shambaugh, and Taylor 2010).

Such risks are not limited to emerging and developing economies. Banks worldwide fund themselves with borrowing in key advanced-economy currencies, notably the US dollar, which continues to play a pivotal international role long after the Bretton Woods system's demise.[9] During the global financial crisis, for example, European banks found it difficult to roll over short-term US dollar credits, and faced the prospect of having to liquidate dollar-denominated assets in fire sale conditions. Ad hoc swap lines, through which the Federal Reserve lent dollars, and with which

[9] A prescient meditation on the centrality of the US dollar, still relevant 50 years later, is Kindleberger (1967).

foreign central banks could meet these needs (and assume the attached credit risk), helped stabilize markets. Indeed, these arrangements became permanent late in 2013 among the six key advanced-economy central banks. Helpful and necessary as this arrangement is, it still leaves emerging-market central banks out in the cold (Weder di Mauro and Zettelmeyer 2017).

The existing system of gross reserve holding by emerging-market central banks has several drawbacks, discussed in detail in Obstfeld (2013), among which is the risk that large-scale reserve accumulation is deflationary globally. These problems could be ameliorated if instead emerging and developing countries had better access to credit lines. Traditional IMF lending cannot fulfill this role, as IMF programs are subject to conditionality and time-consuming negotiation. Over the years, the IMF has tried to offer various more-flexible credit facilities for prequalified borrowers, but few countries have signed up, fearing either the stigma of asking for a credit line or of receiving one and later being disqualified. In any case, a globally systemic crisis would strain the Fund's capacity. The desire of nonadvanced economies to hold higher reserves raises a modern-day analog of the Triffin paradox from the 1960s (Farhi, Gourinchas, and Rey 2011; Obstfeld 2013). Reserves these days mostly take the form of high-quality "safe" liabilities of advanced countries, generally government-issued or -guaranteed. But the supply of these liabilities is not unlimited; indeed, it has arguably shrunk as several advanced-country governments, notably in the euro area, became fiscally challenged after the crises of 2008–2012. Just as the Triffin dilemma during the 1960s was that the United States could not continue to satisfy the world's growing demand for dollar reserves without undermining its commitment to convert them into gold, so the advanced-economy reserve issuers cannot issue unlimited amounts of reserve claims without undermining the "safe asset" character of those liabilities that makes them useful as reserve assets in the first place. There is little doubt that excess global demand for safe assets, including safe reserve assets, is contributing to the current low interest rate environment in the world economy.

Summing Up

One of the most important realizations to come out of the global financial crisis of 2007–09 and its aftermath was that standard models of macroeconomic stabilization had not paid sufficient attention to finance and financial markets. A similar realization holds for models of international monetary relations. In both cases, policy practice and intellectual debate have been struggling for centuries to address financial stability concerns. In the last few decades, the task has become even more urgent in the face of rapidly evolving financial markets, seemingly intent on pushing risky activities outside the perimeters of regulation. Economic analysis still needs to bring the risks of financial instability into its core frameworks, from the analysis of business cycles to that of international economic interactions.

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References

Abdelal, Rawi. 2007. *Capital Rules: The Construction of Global Finance.* Harvard University Press.

▶**Aiyar, Shekhar, Charles W. Calomiris, and Tomasz Wieladek.** 2014. "Does Macro-Prudential Regulation Leak? Evidence from a UK Policy Experiment." *Journal of Money, Credit, and Banking* 46(S1): 181–214.

▶**Avdjiev, Stefan, Robert N. McCauley, and Hyun Song Shin.** 2016. "Breaking Free of the Triple Coincidence in International Finance." *Economic Policy* 31(87): 409–51.

Bagehot, Walter. 1873. *Lombard Street: A Description of the Money Market.* Henry S. King and Co.

Bakker, Age F. P. 1996. *The Liberalization of Capital Movements in Europe: The Monetary Committee and Financial Integration, 1958–1994.* Kluwer Academic Publishers.

Bayoumi, Tamim. Forthcoming. *The Unexplored Causes of the Financial Crisis and the Lessons Yet to Be Learned.* Yale University Press.

Bernanke, Ben S. 1983. "Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression." *American Economic Review* 73(3): 257–76.

Bernanke, Ben S. 2005. "The Global Saving Glut and the U.S. Current Account Deficit." Lecture presented at the Sandridge Lecture, Virginia Association of Economists, Richmond, Virginia, March 10.

Bernanke, Ben S., Carol Bertaut, Laurie Pounder DeMarco, and Steven Kamin. 2011. "International Capital Flows and the Returns to Safe Assets in the United States, 2003–2007." *Revue de la Stabilité Financière* 15: 15–30.

▶**Bernanke, Ben S., and Kevin Carey.** 1996. "Nominal Wage Stickiness and Aggregate Supply in the Great Depression." *Quarterly Journal of Economics* 111(3): 853–83.

Bernanke, Ben S., and Harold James. 1991. "The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison." In *Financial Markets and Financial Crises,* edited by R. Glenn Hubbard, 33–68. University of Chicago Press.

Blanchard, Olivier. 2016. "Currency Wars, Coordination, and Capital Controls." NBER Working Paper 22388.

▶**Blanchard, Olivier, and Gian Maria Milesi-Ferretti.** 2012. "(Why) Should Current Account Balances Be Reduced?" *IMF Economic Review* 60(1): 139–50.

Bordo, Michael D., and Anna J. Schwartz, ed. 1984. *A Retrospective on the Classical Gold Standard, 1821–1931.* University of Chicago Press.

Borensztein, Eduardo R., Jeromin Zettelmeyer, and Thomas Philippon. 2001. "Monetary Independence in Emerging Markets: Does the Exchange Rate Regime Make a Difference?" IMF Working Paper WP/01/1.

Borio, Claudio, and Piti Disyatat. 2015. "Capital Flows and the Current Account: Taking Financing (More) Seriously." BIS Working Paper 525.

Borio, Claudio, Harold James, and Hyun Song Shin. 2014. "The International Monetary and Financial System: A Capital Account Historical Perspective." BIS Working Paper 457.

Caballero, Ricardo J., Emmanuel Farhi, and Pierre-Olivier Gourinchas. 2015. "Global Imbalances and Currency Wars at the ZLB." NBER Working Papers 21670.

Caceres, Carlos, Yan Carrière-Swallow, and Bertrand Gruss. 2016. "Global Financial Conditions and Monetary Policy Autonomy." IMF Working Paper WP/16/108.

Calvo, Guillermo A., and Carmen M. Reinhart. 2002. "Fear of Floating." *Quarterly Journal of Economics* 117(2): 379–408.

Campa, Jose Manuel. 1990. "Exchange Rates and Economic Recovery in the 1930s: An Extension to Latin America." *Journal of Economic History* 50(3): 677–82.

Cassis, Youssef. 2011. *Crises and Opportunities: The Shaping of Modern Finance.* Oxford University Press.

Cerutti, Eugenio, Stijn Claessens, and Luc Laeven. 2017. "The Use and Effectiveness of Macroprudential Policies: New Evidence." *Journal of Financial Stability* 28: 203–24.

Chinn, Menzie D., and Hiro Ito. 2006. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions." *Journal of Development Economics* 81(1): 163–92.

Cooper, Richard N. 1982. "The Gold Standard: Historical Facts and Future Prospects." *Brookings Papers on Economic Activity* 1: 1–45.

Dagher, Jihad C. 2016. "Regulatory Cycles: Revisiting the Political Economy of Financial Crises." Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2772373.

di Giovanni, Julian, and Jay C. Shambaugh. 2008. "The Impact of Foreign Interest Rates on the Economy: The Role of the Exchange Rate Regime." *Journal of International Economics* 74(2): 341–61.

Díaz-Alejandro, Carlos F. 1985. "Good-bye Financial Repression, Hello Financial Crash." *Journal of Development Economics* 19(1–2): 1–24.

Eggertsson, Gauti B., Neil R. Mehrotra, Sanjay R. Singh, and Lawrence H. Summers. 2016. "A Contagious Malady? Open Economy Dimensions of Secular Stagnation." *IMF Economic Review* 64(4): 581–634.

Eichengreen, Barry. 1992. *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939.* Oxford University Press.

Eichengreen, Barry. 2008. *Globalizing Capital: A History of the International Monetary System,* 2nd edition. Princeton University Press.

Eichengreen, Barry, and Jeffrey Sachs. 1985. "Exchange Rates and Economic Recovery in the 1930s." *Journal of Economic History* 45(4): 925–46.

Farhi, Emmanuel, Pierre-Olivier Gourinchas, and Hélène Rey. 2011. *Reforming the International Monetary System.* Centre for Economic Policy Research.

Fischer, Stanley. 1997. "Capital Account Liberalization and the Role of the IMF." Paper presented at the Asia and the IMF Seminar, Hong Kong, China, September 19.

Fischer, Stanley. 2003. "Financial Crises and Reform of the International Financial System." *Review of World Economics/Weltwirtschaftliches Archiv* 139(1): 1–37.

Frankel, Jeffrey, Sergio L. Schmukler, and Luis Servén. 2004. "Global Transmission of Interest Rates: Monetary Independence and Currency Regime." *Journal of International Money and Finance* 23(5): 701–33.

Friedman, Milton. 1953. "The Case for Flexible Exchange Rates." In *Essays in Positive Economics*, 157–203. University of Chicago Press.

Friedman, Milton, and Anna Jacobson Schwartz. 1963. *A Monetary History of the United States, 1867–1960.* Princeton University Press.

Hale, Galina, and Maurice Obstfeld. 2016. "The Euro and the Geography of International Debt Flows." *Journal of the European Economic Association* 14(1): 115–44.

Hamilton, James D. 1988. "Role of the International Gold Standard in Propagating the Great Depression." *Contemporary Policy Issues* 6(2): 67–89.

Hetzel, Robert L., and Gary Richardson. 2016. "Money, Banking, and Monetary Policy from the Formation of the Federal Reserve until Today." Federal Reserve Bank of Richmond Working Paper 16–1.

Hsieh, Chang-Tai, and Christina D. Romer. 2006. "Was the Federal Reserve Constrained by the Gold Standard during the Great Depression? Evidence from the 1932 Open Market Purchase Program." *Journal of Economic History* 66(1): 140–76.

International Monetary Fund. 2012. *The Liberalization and Management of Capital Flows: An Institutional View.* Washington, DC: International Monetary Fund.

Irwin, Douglas A. 2011. *Trade Policy Disaster: Lessons from the 1930s.* MIT Press.

Irwin, Douglas A. 2012–2013. "The French Gold Sink and the Great Deflation of 1929–32." *Cato Papers on Public Policy* 2: 1–56.

Jalil, Andrew J. 2015. "A New History of Banking Panics in the United States, 1825–1929: Construction and Implications." *American Economic Journal: Macroeconomics* 7(3): 295–330.

Johnson, Harry G. 1969. "The Case for Flexible Exchange Rates, 1969." *Federal Reserve Bank of St. Louis Review* 51(6): 12–24.

Jordà, Òscar, Moritz Schularick, and Alan M. Taylor. Forthcoming. "Macrofinancial History and the New Business Cycle Facts." In *NBER Macroeconomics Annual 2016, Volume 31,* edited by Martin Eichenbaum and Jonathan A. Parker. University of Chicago Press.

Kindleberger, Charles P. 1967. "The Politics of International Money and World Language." *Essays in International Finance* 61: 1–16.

Kindleberger, Charles P. 1973 [2013]. *The World*

in Depression: 1929–1939. 40th Anniversary edition. University of California Press.

Kaminsky, Graciela L., and Carmen M. Reinhart. 1999. "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems." *American Economic Review* 89(3): 473–500.

Keynes, John Maynard. 1925. *The Economic Consequences of Mr. Churchill*. Leonard and Virginia Woolf at the Hogarth Press.

Keynes, John Maynard. 1930 [2012]. *A Treatise on Money*, Vol. 2: *The Applied Theory of Money*. Vol. 6 of The Collected Writings of John Maynard Keynes. Cambridge University Press.

Klein, Michael W., and Jay C. Shambaugh. 2015. "Rounding the Corners of the Policy Trilemma: Sources of Monetary Policy Autonomy." *American Economic Journal: Macroeconomics* 7(4): 33–66.

Laidler, David. 2003. "Two Views of the Lender of Last Resort: Thornton and Bagehot." *Cahiers d'Economie Politique* 45: 61–78.

Lane, Philip R. 2012. "Financial Globalisation and the Crisis." BIS Working Paper 397.

Lane, Philip R. 2013. "Capital Flows in the Euro Area." European Commission European Economy Economic Paper 497.

League of Nations. 1944. *International Currency Experience: Lessons of the Interwar Period*. Princeton University Press.

McKinnon, Ronald I. 1973. *Money and Capital in Economic Development*. Brookings Institution Press.

Meade, James E. 1955. "The Case for Variable Exchange Rates." *Three Banks Review* 27: 3–27.

Miniane, Jacques, and John H. Rogers. 2007. "Capital Controls and the International Transmission of U.S. Money Shocks." *Journal of Money, Credit, and Banking* 39(5): 1003–35.

Miranda-Agrippino, Silvia, and Hélène Rey. 2015. "World Asset Markets and the Global Financial Cycle." NBER Working Paper 21722.

Mishkin, Frederic S. 1978. "The Household Balance Sheet and the Great Depression." *Journal of Economic History* 38(4): 918–37.

Mishra, Prachi, and Raghuram Rajan. 2016. "Rules of the Monetary Game." Department of Economic and Policy Research Reserve Bank of India RBI Working Paper 04/2016.

Obstfeld, Maurice. 2013. "The International Monetary System: Living with Asymmetry." In *Globalization in an Age of Crisis: Multilateral Economic Cooperation in the Twenty-First Century*, edited by Robert C. Feenstra and Alan M. Taylor, 301–36. University of Chicago Press.

Obstfeld, Maurice. 2015. "Trilemmas and Tradeoffs: Living with Financial Globalization." In *Global Liquidity, Spillovers to Emerging Markets and Policy Responses*, edited by Claudio Raddatz, Diego Saravia, and Jaume Ventura, 13–78. Central Bank of Chile.

Obstfeld, Maurice, Jonathan D. Ostry, and Mahvash S. Qureshi. 2017. "A Tie that Binds: Revisiting the Trilemma in Emerging Market Economies." IMF Working Paper WP/17/130, June.

Obstfeld, Maurice, Jay C. Shambaugh, and Alan M. Taylor. 2004. "Monetary Sovereignty, Exchange Rates, and Capital Controls: The Trilemma in the Interwar Period." *IMF Staff Papers* 51(Special Issue): 75–108.

Obstfeld, Maurice, Jay C. Shambaugh, and Alan M. Taylor. 2005. "The Trilemma in History: Tradeoffs among Exchange Rates, Monetary Policies, and Capital Mobility." *Review of Economics and Statistics* 87(3): 423–38.

Obstfeld, Maurice, Jay C. Shambaugh, and Alan M. Taylor. 2010. "Financial Stability, the Trilemma, and International Reserves." *American Economic Journal: Macroeconomics* 2(2): 57–94.

Obstfeld, Maurice, and Alan M. Taylor. 1998. "The Great Depression as a Watershed: International Capital Mobility over the Long Run." In *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*, edited by Michael D. Bordo, Claudia Goldin, and Eugene N. White, 353–402. University of Chicago Press.

Obstfeld, Maurice, and Alan M. Taylor. 2004. *Global Capital Markets: Integration, Crisis, and Growth*. Cambridge University Press.

Ocampo, José Antonio. 2015. "Capital Account Liberalization and Management." WIDER Working Paper 2015/048.

Ostry, Jonathan D., Atish Ghosh, Karl Habermeier, Marcos Chamon, Mahvash S. Qureshi, and Dennis B. S. Reinhardt. 2010. "Capital Inflows: The Role of Controls." International Monetary Fund Staff Position Note 10/04.

Padoa-Schioppa, Tommaso. 1988. "The European Monetary System: A Long-Term View." In *The European Monetary System*, edited by Francesco Giavazzi, Stefano Micossi, and Marcus Miller, 369–384. Cambridge University Press.

Passari, Evgenia, and Hélène Rey. 2015. "Financial Flows and the International Monetary System." *Economic Journal* 125(584): 675–98.

Polanyi, Karl. 1944. *The Great Transformation*. Farrar & Rinehart.

Qian, Rong, Carmen M. Reinhart, and Kenneth S. Rogoff. 2011. "On Graduation from Default, Inflation and Banking Crises: Elusive or Illusion?" In *NBER Macroeconomics Annual 2010,* vol. 25, edited by Daron Acemoglu and Michael Woodford, 1–36. University of Chicago Press.

Quinn, Dennis, Martin Schindler, and A. Maria Toyoda. 2011. "Assessing Measures of Financial Openness and Integration." *IMF Economic Review* 59(3): 488–522.

Rajan, Raghuram G., and Luigi Zingales. 2003. "The Great Reversals: The Politics of Financial Development in the Twentieth Century." *Journal of Financial Economics* 69(1): 5–50.

Reinhart, Carmen M., Vincent Reinhart, and Christoph Trebesch. 2016. "Global Cycles: Capital Flows, Commodities, and Sovereign Defaults, 1815–2015." *American Economic Review* 106(5): 574–80.

Rey, Hélène. 2013. "Dilemma Not Trilemma: The Global Financial Cycle and Monetary Policy Independence." Paper presented at the Global Dimensions of Unconventional Monetary Policy Federal Reserve Bank of Kansas City Symposium, Jackson Hole, WY, August 21–23.

Rey, Hélène. 2016. "International Channels of Transmission of Monetary Policy and the Mundellian Trilemma." *IMF Economic Review* 64(1): 6–35.

Ricci, Luca Antonio, and Wei Shi. 2016. "Trilemma or Dilemma; Inspecting the Heterogeneous Response of Local Currency Interest Rates to Foreign Rates." IMF Working Paper WP/16/75.

Ruggie, John Gerard. 1982. "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order." *International Organization* 36(2): 379–415.

Schoenmaker, Dirk. 2013. *Governance of International Banking: The Financial Trilemma*. Oxford University Press.

Shambaugh, Jay C. 2004. "The Effect of Fixed Exchange Rates on Monetary Policy." *Quarterly Journal of Economics* 119(1): 301–52.

Shaw, Edward S. 1973. *Financial Deepening in Economic Development*. Oxford University Press.

Smith, Adam. 1776. *The Wealth of Nations*.

Temin, Peter. 1989. *Lessons from the Great Depression*. MIT Press.

Thornton, Henry. 1802. *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*. J. Hatchard.

Triffin, Robert. 1960. *Gold and the Dollar Crisis: The Future of Convertibility*. Yale University Press.

Weder di Mauro, Beatrice, and Jeromin Zettelmeyer. 2017. *CIGI Essays on International Finance: The New Global Financial Safety Net: Struggling for Coherent Governance in a Multipolar System*, vol. 4. Centre for International Governance Innovation.

Williamson, John, and Molly Mahar. 1998. "A Survey of Financial Liberalization." *Essays in International Finance* 211: 1–74.

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