

## Panel Discussion on the Federal Reserve's Role in International Financial Crises

### The Fed's Role in International Crises

Donald Kohn

For my contribution to this panel, I will reflect on the role of the Federal Reserve in the last crisis – focusing on the 2007–09 period when the crisis was most intense in the United States and tending to spread to the rest of the world, and I was inside the institution helping to formulate policy. The Fed played a central role in dealing with the international aspects of the crisis through this period. We provided liquidity to many foreign banks – to their US subsidiaries and affiliates at our discount window here at home, but importantly and innovatively also to their home offices through a network of liquidity swap arrangements with other central banks, which I will discuss at length. But we also were central to the monetary policy response around the world, and I will touch on this aspect of our involvement briefly at the end of my remarks.

The centrality of the Fed's role reflects a number of factors. US financial markets and institutions are themselves at the center of an increasingly integrated global financial system. Deep, liquid markets for dollar assets are a natural investment outlet for investors in the rest of the world, including many official entities. The dollar remains the most important reserve currency, many international transactions are denominated in dollars, and dollar foreign exchange and swap markets are critical venues for managing risk. The largest US financial institutions are global in reach and any impairment of their normal functioning – their provision of intermediary, risk management, liquidity, and payment services – affects economies around the world.

Moreover, the buildup of risks in the period leading up to the crisis and the transmission of their realization around the globe had a lot to do with domestic US markets. The United States was “ground zero” in the 2007–09 crisis years – especially the subprime mortgage market. US subprime assets were widely held around the globe, so problems with those assets were quickly transmitted overseas, and the United States was exposed to the decisions of foreign financial institutions and governments about how to respond. Those global interconnections were key to understanding the Fed’s response in the international sphere.

Barry Eichengreen and others have noted a “modern Triffin dilemma.” The original Triffin dilemma in the Bretton Woods exchange rate system pointed out the tension for the United States and the global financial system between providing for the world’s growing needs for dollar liquidity, which required that the United States run a current account deficit, and assuring that the growing amount of foreign dollar holdings was exchangeable into gold from what was a relatively stable stock. The modern Triffin dilemma highlights the tension between the growing demands for dollar assets – primarily the debt of US entities – and financial stability. Stability could be threatened when the increasing demand for dollar assets induces a buildup in US debt to levels that might be difficult to service, especially when it is based on inflated collateral values. In the run up to the crisis, foreign demands for US debt were rising rapidly for several reasons.

One was the US current account deficit, which reached 6 percent of GDP. The United States was spending far more than it was producing, importing the difference, and financing those net imports by borrowing from abroad, resulting in a faster increase in net indebtedness than in income. This deficit was shaped to some extent by exogenous spending/saving decisions in the United States – that is, the federal fiscal deficit stoked by tax cuts. But it also was the consequence of the choices of foreign governments – in particular the decisions of the Chinese and other governments to pursue export-led growth. This entailed artificially holding down the value of their currencies on foreign exchange markets and in the process accumulating huge dollar reserves. These were invested mostly in safe, liquid assets, and the demand for these assets depressed longer-term interest rates in the United States and globally.

The buildup of vulnerabilities was exacerbated by the investment choices made by foreign private parties – and here I will emphasize gross as well as net flows from overseas into dollar markets. Foreign banks looking for low-risk higher-yield investments latched onto various types of US

securities, most especially super senior tranches of pools of subprime mortgages. Their demand, along with demand from US sources, fed the inventiveness of the US financial sector in constructing a supply of increasingly opaque, but nominally very safe, instruments and contributed to the loosening of credit standards for subprime mortgages. Foreign financial institutions financed their holdings of these fundamentally long-term assets in large part with wholesale short-term liabilities. These included asset-backed commercial paper (ABCP) issued by SIVs (conduits sponsored by the banks) and deposits from money funds. They were also funded by domestic deposits converted into dollars in short-term swap markets. European banks were prominent in these trades.

On the eve of the crisis, then, foreign institutions were looking at a currency mismatch and a maturity mismatch, and they were relying on the illusion of liquidity, especially in the MBS market, to manage risks. I'm not blaming the crisis on these foreign governments or institutions. Obviously many of the same weaknesses (not the currency mismatch) and more were shared by US domestic lenders and it was US regulators that had responsibility for overseeing US markets. But the actions of foreign banks and governments contributed, and the role of the Fed in the international aspects of the crisis very much reflected the character of the risks that had built up across borders.

After house prices started to decline and the adequacy of the collateral backing for many of those subprime loans was called into question, uncertainty about where the losses would fall disrupted interbank lending markets – both here and abroad. The functioning of these markets was impaired, and funding tenors became even shorter. The runoff of ABCP increased the direct exposure to subprime and other mortgage loans of foreign and domestic banks that had provided liquidity backstops to these conduits and SIVs, further increasing uncertainty about solvency. The pull-back by global banks as funding became more expensive and its availability uncertain, along with the onset of recessions in some industrial economies, transmitted problems to economies where banks hadn't taken risks – including many emerging markets.

Swaps with foreign central banks for the purposes of allowing those central banks to provide dollar liquidity to their commercial banks was a major aspect of the Fed's response and one that was new to this crisis. We saw it as a logical extension in interconnected global financial markets of a basic central bank function – supplying liquidity when uncertainty causes the usual funders of banks and other financial institutions to back away. In these circumstances, central bank liquidity becomes necessary to break or

at least to damp the adverse feedback loop between funding difficulties and credit supplies to the economy.

From the onset of the crisis in August 2007, the financial markets were characterized by disruptions to bank and later nonbank funding as uncertainty about the solvency and viability of counterparties mounted. The lack of transparency in structured investments and in the balance sheets of some complex institutions and the sense that events were moving fast with unknown outcomes meant that market participants could not and did not discriminate well between good and bad counterparties. Their actions came to be dominated by fear and a run to safety and liquidity, resulting in a sharp cutback in lending to businesses and households as well as rapid sales of assets at declining market prices. Reduced lending and lower asset prices contributed in turn to a weakening economy, greater disruption of funding markets, and adverse effects on market liquidity. We were in a doom loop, whose intensity varied from late 2007 on, but didn't fully abate in the United States until after the banks were recapitalized and the stress tests of 2009 brought transparency to their condition. This type of market response could not be countered by open market operations because the reserves and liquidity would not be distributed through the financial system to where they were needed.

As a consequence, from the beginning central banks utilized their lending facilities to respond to the emerging crisis. This was seen as classic Bagehot central banking: when funding is generally disrupted, lend freely at a penalty rate against good collateral (valued as in normal times) to solvent institutions. This is the way to stem the panic, avoid fire sales, limit the reduction in credit availability, shore up confidence, and enhance market functioning.

The first liquidity swaps to deal with the cross-border aspects of disruptions to funding markets were announced in December 2007 with the European Central Bank and the Swiss National Bank. Increasingly intense foreign bank bidding for short-term dollar funding was putting upward pressure on the federal funds and other short-term dollar interest rates. Sales by foreign banks were adding to downward pressure on the prices of mortgage assets and having adverse effects on the liquidity in US financial markets.

By doing swaps with other central banks in addition to domestic discount window lending, the Federal Reserve was able to help relieve pressure in US funding markets without itself needing to make judgments about the solvency of foreign institutions and without taking risks of lending to these institutions. And they allowed the foreign central bank to make the moral

hazard judgment that necessarily accompanies any provision of liquidity insurance. This seemed appropriate since home country authorities were overseeing these large globally active banks, and it would be home country taxpayers that could bear the consequences if liquidity failure turned into capital failure and if the failure of an institution impaired the functioning of home country financial markets. Moreover, global banks are often managed on a consolidated basis; the swaps enabled the banks to borrow dollars where collateral was located and then to redistribute that liquidity around their systems. The initial press release emphasized that the swaps were intended to help the functioning of United States and global markets.

The December 2007 announcement was coordinated across several foreign central banks in addition to the ECB and SNB in the context of a broad array of measures to relieve pressures and enhance the functioning of funding markets. For example, in the United States, the same press release announced the Term Auction Facility (TAF) for auctioning discount window credit here. The swaps were one element in a broad effort to make liquidity available so as to bolster confidence and reduce the adverse effects of market disruptions.

As the crisis deepened after the failure of Bear Stearns and then Lehman Brothers, the dollar swaps network grew in scope and size. It came to include fourteen countries; the ECB, Bank of Japan, SNB, and Bank of England were running TAF-like auctions of dollar loans, with no upper bound on what they swapped with us and lent to their banks. At the end of 2008, \$554 billion was outstanding to nine different authorities; Mexico borrowed later, so at least ten central bank counterparties took advantage of these facilities. At the same time, of course, the scope and size of discount window lending in the United States was greatly expanding. The volume of lending through swaps came down rapidly as panic abated; this indicates that they were priced right in accordance with Bagehot principals – at a penalty to rates that would prevail if markets were functioning normally.

Did they work? Here's the bottom line of an extensive study published in 2010 by William Allen and Richhild Moessner in a BIS working paper: "We conclude that the swap lines provided by the Federal Reserve were very effective in relieving U.S. dollar liquidity stresses and stresses in foreign exchange markets, so that the Fed's objectives were substantially met. It seems plausible that had the Fed not acted as it did, global financial instability would have been much more serious and that the recession consequently would have been deeper. The effectiveness of the Fed's actions was most likely due to the fact that funds were provided quickly, limits were raised flexibly as the financial crisis intensified, especially after the failure

of Lehman Brothers, and that large amounts were provided via the swap lines.”<sup>1</sup>

Still, the swap lines raised some difficult issues as the FOMC debated their expansion in the fall of 2008. The first issue was the boundary problem: who to include and exclude. This came to the fore in particular when the swaps were extended to emerging market economies. We included Brazil, Korea, Mexico, and Singapore, which were characterized as “four large and systemically important economies” in the press release that announced the expansion, but undoubtedly other countries saw themselves as fitting into that category as well.

In the discussion at the October 2008 FOMC meeting, Nathan Sheets, the director of the Division of International Finance, put forth three criteria. First, that each country has significant economic and financial mass so problems there can spill over into the United States (Singapore was a systemically important financial center.) Second, that each had been well managed with prudent policies in place so that the stresses they were experiencing were a consequence of problems in the United States and other advanced economies. And third, that the swaps would help – that their banks had experienced or were subject to stresses related to dollar funding.<sup>2</sup>

The FOMC members generally agreed with these criteria and found that the four countries in question met them. Nonetheless, it was uncomfortable for the FOMC to be the arbiter of the soundness of other countries’ policies, the liquidity requirements of their banks, and their systemic importance. The FOMC is always assessing the likely course of events in the rest of the world as they might affect the United States and progress toward the FOMC’s objectives, but this issue raised the required knowledge and judgment to a very much higher and more detailed level, and the results of who might be in or out could have major effects on the countries involved. And how would the FOMC monitor whether the funds were being used for the intended purposes and not to avoid needed adjustment?

The second difficult issue related to the availability of alternative sources of liquidity for the authorities – to what extent should the Fed insist on other sources being utilized before it became the lender or swapper of last resort? Several of the fourteen had a large volume of dollar reserves that might be used to lend to their banks. In most cases, however, those reserves were being held for purposes of currency intervention, not liquidity provision

<sup>1</sup> Central Bank Cooperation and International Liquidity in the Financial Crisis of 2008–09, BIS Working Paper 310, May 2010, p. 75.

<sup>2</sup> [www.federalreserve.gov/monetarypolicy/files/FOMC20081029meeting.pdf](http://www.federalreserve.gov/monetarypolicy/files/FOMC20081029meeting.pdf)



to banks. Forcing them to run down their reserves before swaps were activated might send an adverse signal in exchange markets, where some were already under pressure. Moreover, in most cases they didn't have enough dollar reserves to meet the potential liquidity needs of their banks and those limits would undermine confidence-enhancing effects of the dollar loans. Being an effective lender of last resort requires the possibility of unlimited resources, and the Fed was the only institution that met this criterion.

Another alternative might have been borrowing from the IMF. We were in near-constant contact with the IMF as the swaps for Brazil, Korea, Mexico, and Singapore were being put together. The IMF's resources are quite limited, however, and loans from the IMF were perceived as carrying a substantial stigma, as in the past those loans had signaled crisis conditions in the borrowing country and were accompanied by many conditions for major reforms and often austerity. As such they carried considerable political as well as economic risk for the leaders of the borrowing country. The IMF initiated a new facility that relied on prequalification and was for liquidity, not solvency, purposes and didn't have the conditionality of other IMF facilities. But this facility was just getting started in the fall of 2008, and it was unclear whether it would work with enough resources and with largely unconditional access for sound economies and institutions.

How best to handle cross-border lender of last resort responsibilities for a wide array of nations is still an open question – one that Steve Cecchetti will address in his comments. It's important that the global policy community address this now. Uncertainty about whether a lender will be available in a crisis will only contribute to reserve accumulation as countries self-insure, putting contractionary pressure on global growth and output.

As I noted at the beginning of these remarks, swaps and liquidity provision weren't the only areas in which the Fed was deeply involved in international aspects of the crisis. Another was monetary policy. On October 8, 2008, six major central banks, including the Federal Reserve, announced simultaneous adjustments of their policy stances, with a view toward "effecting some easing of global monetary conditions." This coordinated action was unprecedented. I don't know who made the first phone call that started the banks down this path, but the participation and leadership of the Federal Reserve were essential. Importantly the coordinated cut provided a mechanism to help the ECB turn away from its focus on inflation, which had precipitated an increase in rates in the euro area in August. It was intended to boost confidence; the central banks were on the job coordinating actions on the thought that working together quite visibly would be more effective than acting separately. Bank capital injections, borrowing

guarantees, and more expansionary fiscal policy would be required, but these would all take more time, and meanwhile central banks could act quickly and together.

More generally, the Federal Reserve, under the leadership of Ben Bernanke, led in innovating ways to ease financial conditions even after short-term rates had effectively hit zero – innovations that have been followed by other central banks. We cut rates aggressively at the early stages of the crisis and then after it deepened on the failure of Lehman Brothers. Once at the zero lower bound for nominal rates, the Fed used combinations of asset purchases and guidance about future interest rate targets to effect as further easing of financial conditions in order to stimulate growth and limit disinflation. Other central banks may have implemented parts of this program earlier, but the Fed put it together, innovated as more became needed, and explained why it was necessary for global economic recovery, even if some other countries were uncomfortable with the resulting capital flows. Over time other advanced economy central banks have adopted many of the elements of the Federal Reserve's program.



## The Fed in International Crises

Charles Bean

I retired as the Bank of England's Deputy Governor for monetary policy in June 2014, having taken up the post just a couple of months before the collapse of Lehman Brothers. One of my roles was as the Bank's deputy at G7, G20, and IMF meetings and, given that, I thought that today I would reflect on some of the international aspects of the Fed's monetary policies during the Great Recession. In so doing, I aim to complement Don Kohn's discussion of the part played by the currency swap lines during the crisis.

As you are no doubt aware, there has been fairly vocal criticism in the G20 by some emerging economies of the highly stimulatory unconventional monetary policies pursued by the Federal Reserve – and by implication other central banks pursuing similar policies, including the Bank of England. The first bout occurred during 2010, when Guido Mantega, the Brazilian Finance Minister, famously accused the Fed of engaging in a “currency war” to depreciate the dollar. More recently, as the Fed moved to taper its asset purchases and began to prepare the ground for a normalization of policy rates, there was renewed criticism as emerging economies struggled to deal with the associated reversal in the flows of capital and a rise in the volatility of exchange rates and other asset prices.

The currency war argument rests on the view that the Fed's monetary policies were of the beggar-thy-neighbor variety. But, of course, there are several channels of international propagation, most of which generate positive, rather than negative, demand spillovers. Aside from the expenditure switching induced by dollar depreciation, expansionary monetary policies of either the conventional or unconventional variety generate an increase in US aggregate demand through intertemporal substitution and wealth effects, in turn generating positive demand spillovers to other countries through the import channel.

In addition, asset purchases reduce yields not only in the markets where the purchases take place, but also in the markets for substitute assets through portfolio balance effects. There are several papers that find the Fed's asset purchases also lowered yields in other countries' bond markets. For instance, Neely (2010) found that the impact on the yields on the sovereign bonds in other advanced economies was around half that of the impact on US yields, while Moore et al. (2013) found that the impact on emerging-economy government bond yields was around one-sixth of the impact on US yields. The falls in these bond yields will have further boosted foreign aggregate demand, through similar channels to which they raised US aggregate demand.

The net spillovers overseas associated with the Fed's aggressive monetary actions during the Great Recession were consequently theoretically ambiguous in sign. Moreover, simulations with global macroeconomic models invariably suggest that the net effect on activity in the rest of the world was likely to have been expansionary, not contractionary. Given that the world economy was – and still is – suffering from insufficient aggregate demand, I conclude that the Fed's monetary policies were helpful not only domestically but also for the rest of the world.

Rather than resulting from a deliberate attempt to shift the burden of the recession overseas through currency depreciation, the associated movements in exchange rates should obviously be seen instead as an incidental, and countervailing, by-product of a policy aimed at stimulating demand. Moreover, there is little sign that such a beggar-thy-neighbor depreciation actually took place, as both the dollar and the sterling effective exchange rates proved remarkably stable after the inception of quantitative easing.<sup>1</sup> That may have reflected the impact of enhanced growth prospects offsetting the impact of interest rate differentials.

As I see it, the problem lay less with the Fed's actions and more with the unwillingness of some other countries to adjust their policies enough to restore and rebalance the pattern of global aggregate demand, including permitting sufficient real exchange rate adjustment. Participants at successive G20 meetings from 2010 onwards agreed that a better outcome for the world economy could be achieved by combining three elements: steady fiscal consolidation in those advanced economies running large, and potentially unsustainable, fiscal deficits; structural reforms to product and labor markets in both advanced and emerging economies to boost supply

<sup>1</sup> Sterling did fall by almost a third in the early stages of the crisis, but the movement was complete by the time the Bank of England started buying assets in March 2009.

potential; and a rotation of the source of aggregate demand toward those countries running chronic current account surpluses before the crisis and away from those running chronic deficits.

This strategy was encapsulated in the G20 Framework for Strong, Sustainable, and Balanced Growth, but the recovery proved anything but strong, sustainable, and balanced. Why was it so difficult to achieve a superior co-ordinated outcome in practice? In part I believe that it reflects the inherent asymmetry, noted long ago by Keynes, that the pressure to adjust is typically greater on debtor than creditor nations; this asymmetry in the burden of adjustment can probably only be satisfactorily addressed if surplus countries attach a reasonably high probability to being on the other side of the fence in the not-too-distant future. Moreover, frequently layered on top is the moralistic view that saving and surpluses are somehow worthy while borrowing and deficits are shameful. In addition, because multiple actions by multiple actors are needed, there is real difficulty in ensuring that promises are kept and free riding is avoided. And that is more of a problem, the weaker are the political ties between countries.

I have more sympathy with the recent criticism of US policies prompted by 2013's "taper tantrum," if only because the economic rationale is more persuasive. In particular, the focus on this occasion has been the financial stability implications of large swings in capital flows, rather than the consequences for exchange rates or aggregate demand. Moreover, critics such as Raghuraj Rajan recognize that Fed policies need to normalize but are concerned that it should happen in a way that does not create financial instability overseas, for instance by leading to credit crunches or exposing currency mismatches on bank or corporate balance sheets.

I do not think, though, it is reasonable to ask the Fed to "aim off" achieving its domestic objectives of low and stable inflation and high and stable employment in order to take account of these financial stability concerns overseas. Not only would it run counter to the Fed's legal mandate, but it would also appear to constitute a suboptimal assignment of instruments to objectives.

The postcrisis conventional wisdom in the central bank fraternity is that monetary policy should remain focussed on macroeconomic stability, while macroprudential policies should be assigned to the task of mitigating the risks to financial stability. Only once such macroprudential policies have proved ineffective or if the risks are building outside of the regulatory perimeter does it become appropriate to follow a second-best policy of mitigating those risks by following a "leaning against the wind" monetary policy.

By extension, the financial stability risks to emerging – and indeed other advanced – economies engendered by the monetary policies of the global financial system's hegemon are in the first instance best managed by the application of suitably targeted macroprudential policies in the affected countries. This includes not only conventional macroprudential policies designed to discourage excessive credit creation and risk concentration, but also those with an international dimension, such as avoiding currency mismatches or putting some “sand in the wheels” to discourage inflows and outflows of footloose foreign capital; see Pereira da Silva (2014) for a nice exposition of the use of such tools in the Brazilian case.

The use of such tools is not without risk, however. Recent experience provides a new legitimacy for so-called capital-management policies that moderate the international flow of capital. But some countries may deploy them to delay or prevent necessary macroeconomic adjustments. It is, therefore, important that bodies such as the IMF keep an eye out to ensure they are not abused.

In addition, macroprudential tools are most effective in attenuating the build up of risk. They are arguably less likely to be effective in reducing the impact of risks that do crystallize. Here the conventional central bank armory of emergency liquidity support is more likely to be of value. Since the dollar is both a key funding currency for banks and often also functions as a safe haven for investors in times of stress, in the international context that requires countries either to have access to an emergency supply of dollars through the IMF or central bank swap lines, or else to self-insure by building up large reserve holdings and all that that entails.

Notwithstanding concerns about moral hazard, my sense from G20 discussions is that the emerging economies would feel considerably more comfortable about the Fed's exit from unconventional policies if they knew they could also rely on Fed support in the event of attendant financial instabilities. Indeed, that may represent a *quid pro quo* for the emerging economies' continued support for the current international monetary arrangements.

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## The Global Dollar System

Stephen G. Cecchetti

The global financial crisis started in 2007 when European banks came under increasing strain. If forced to specify the crisis kickoff, I would pick Thursday, August 9, the day that BNP Paribas halted redemptions from three investment funds because it couldn't value their holdings of US mortgages.<sup>1</sup> Responding to the ensuing market scramble for liquidity, the ECB injected €95 billion that day into the European banking system and the Federal Reserve put \$24 billion in theirs. Today, these numbers look quaint. Then, they seemed enormous.<sup>2</sup>

With time we learned that banks outside the United States, in Europe and elsewhere, had been borrowing a large volume of dollars in short-term money markets and investing it in US mortgage-backed securities. As the mortgages started to default and the securities lost value, the non-US banks had trouble rolling over their short-term debt. McGuire and von Peter (2009) eventually estimated the dollar shortfall to be well over \$1 trillion!

That there are significant parts of the global financial system that run on US dollars is no surprise. In 2013, the dollar accounted for 80 percent of trade finance<sup>3</sup> and 87 percent of foreign currency market transactions.<sup>4</sup>

<sup>1</sup> See *New York Times* (2007).

<sup>2</sup> For a contemporary account of the August 2007 event, see Cecchetti (2007).

<sup>3</sup> Data are from SWIFT, [www.swift.com/about\\_swift/shownews?param\\_dcr=news.data/en/swift\\_com/2013/PR\\_RMB\\_nov.xml](http://www.swift.com/about_swift/shownews?param_dcr=news.data/en/swift_com/2013/PR_RMB_nov.xml)

<sup>4</sup> See the Bank for International Settlements (2013).

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But the fact of the matter is that there is an enormous parallel dollar-based financial system – call it the Global Dollar system – that operates outside the United States.

Using data from the BIS, we can estimate the size of this Global Dollar system. Starting with US dollar liabilities of banks outside the United States, we quickly get to a sum around \$13 trillion.<sup>5</sup> (If you have a dollar-denominated account in a bank in London, Zurich, or Hong Kong, it would be included in this total.) Now, not all countries report to the BIS, so this subtotal is incomplete.<sup>6</sup> China and Russia are missing, for example. In addition, Ecuador, El Salvador, and Panama are dollarized, so their banks are issuing dollar liabilities. Tallying these nonreporting sources may add another \$1 trillion. Next come a few trillion dollars from dollar-denominated securities that are issued outside the United States (mostly in London).<sup>7</sup>

All of this leads to the conclusion that the Global Dollar system has issued dollar liabilities of more than \$15 trillion; a volume that exceeds the total liabilities of banks operating within the United States.

Who should be concerned about this? In 1971, President Nixon's Treasury Secretary John Connally famously told an assembled group of European finance ministers: "The dollar is our currency, but your problem." He was speaking about exchange rates, expressing a view that was already questionable forty years ago.

Applied to the twenty-first century global system of dollar finance, Connally's view is patently false. The world's largest intermediaries are now so interdependent that if one gets into trouble, others are likely to follow. And the market for short-term dollar funding is unified globally. Consequently, if a systemically important bank in Europe finds itself unable to roll over dollar liabilities, it can be compelled to sell dollar assets at fire sale prices and, possibly, default, leading other banks to cut lending and hoard safe assets.

Such contagion puts the entire financial system at risk, making the US dollar everyone's problem. By lending to solvent but (temporarily) illiquid banks, a central bank can limit a liquidity crisis. Indeed, it was the frequent banking panics of the late nineteenth and early twentieth century that led to the creation of the Federal Reserve System as the US lender of last resort, the role already played by the European central banks of the day.<sup>8</sup>

<sup>5</sup> This estimate comes from combining information from Tables 5A, 5D, 13A, and 14C from the BIS locational banking statistics available at [www.bis.org/statistics/bankstats.htm](http://www.bis.org/statistics/bankstats.htm)

<sup>6</sup> The list of reporting countries is available at [www.bis.org/statistics/rep\\_countries.htm](http://www.bis.org/statistics/rep_countries.htm)

<sup>7</sup> Data are at [www.bis.org/statistics/secstats.htm](http://www.bis.org/statistics/secstats.htm)

<sup>8</sup> According to Jalil (2015), from 1870 to 1910, there were four major and eight minor banking panics in the United States. This, even though banks appeared to have capital in

Yet, today's two dollar-based financial systems differ in one critical respect: banks operating or based in the United States have access to the Federal Reserve's discount window, so when they suddenly need dollars they can easily get them, provided that they are solvent. Other solvent banks, those in the parallel Global Dollar financial system, have no such access.

As Tucker (2014) so aptly puts it, we assign banks the task of providing liquidity insurance both by offering demand deposits and callable lines of credit. If we are going to have a liquidity insurer, Tucker goes on to say, then we need a liquidity reinsurer. This is a role that we normally assign to the central bank. So long as commercial banks offer liquidity insurance in domestic currency, we are fine. What about transactions in foreign currencies? What if an intermediary issues demandable deposits in a currency other than their domestic money? Who provides the reinsurance then?

Had the Federal Reserve merely accepted that dichotomy, the crisis of 2007–09 would have gotten much deeper much faster as leading European banks dumped assets or defaulted! Instead, in December 2007, the Fed introduced one of its most successful crisis mitigation tools, offering to lend US dollars to foreign central banks that they could in turn lend to their banks. Recognizing that fire sales and defaults of these foreign banks posed a systemic threat back home, the Fed eventually provided fourteen other central banks with large (in some cases, unlimited) dollar swap lines to meet the surge in funding dollar needs.<sup>9</sup> At the height of the crisis in December 2008, the amount lent peaked at nearly \$600 billion.

Countries without access to the Federal Reserve swap lines had to find other alternatives. Some, like Argentina, Brazil, and the Philippines, offered banks access to the US dollar portion of their foreign exchange reserves. Others, including Colombia and Poland, obtained insurance from the IMF through its Flexible Credit Line (FCL).<sup>10</sup>

Policy innovation in the heat of a crisis is one thing. With the crisis over, we can now look forward a bit more calmly and ask: what mechanisms should we put in place to guard against future stresses? How should we manage the system's needs and risks of the Global Dollar system?

I see five possibilities:

1. Use prudential regulation to ban or restrict issuance of US dollar liabilities;

excess of 20 percent. (See the Tables C158 to C237 of the Historical Statistics of the United States.)

<sup>9</sup> The official announcements are on the Federal Reserve's website at [www.federalreserve.gov/monetarypolicy/bst\\_liquidityswaps.htm](http://www.federalreserve.gov/monetarypolicy/bst_liquidityswaps.htm)

<sup>10</sup> See [www.imf.org/external/np/exr/facts/fcl.htm](http://www.imf.org/external/np/exr/facts/fcl.htm) for a description.



2. Make dollar supply the responsibility of the authorities where the activity is taking place;
3. Supply dollars through regional pooling of foreign exchange reserves;
4. Obtain dollars from a supranational institution such as the IMF; or,
5. Make the supply of dollars to the Global Dollar system the responsibility of the Fed.

Banning intermediaries from offering foreign currency accounts is not only naïve, it is foolish. It is naïve because people will find ways to transact in foreign currency regardless of the rules we might make; and it is foolish since it would dramatically reduce cross-border financial activity. Short of an outright ban, domestic prudential measures definitely have their place. But, in the end, restrictions of this sort will be limited to the degree that a country wishes to benefit from participation in the global system.

Moving to the second possibility, if the Banco Central do Brasil lets intermediaries in Rio de Janeiro create liabilities in US dollars, or the Bank of Korea allows banks in Seoul to do the same, isn't it their problem? Having sufficient foreign exchange reserves on hand to manage such a systemic event is surely one reason for the very dramatic accumulation over the past decade. As of mid-2014, aggregate foreign exchange reserves stood close to \$14 trillion, or nearly 20 percent of global GDP. The cost of this is extraordinary. For each percentage point that the real return on these reserves is below the global marginal product of capital, someone is paying 0.2 percent of global GDP per year! And, those that are paying are primarily low-income countries.<sup>11</sup>

It is in an effort to reduce these costs that countries have worked to form regional reserve-pooling arrangements like the Chiang Mai Initiative.<sup>12</sup> But it is hard to see how the size of such a fund can be big enough without the ultimate support of the Fed.

The fourth approach is to have supranational institutions manage dollar shortages. The IMF's FCL, which provides qualified countries with guaranteed access to financing for a fee, is just such an arrangement.<sup>13</sup> But again, the question is one of size. Could the IMF have supplied the nearly \$600

<sup>11</sup> Granted that countries hold foreign exchange reserves for a number of reasons, including defending their exchange rate. But in the end, these are held to manage capital outflows that will occur when their economies and financial systems are under stress.

<sup>12</sup> Initiated in 2000 and enhanced in 2007, the Chiang Mai Initiative is a multilateral swap agreement among ten countries in East Asia – the ASEAN + 3 – that draws on a reserves pool that is currently \$240 billion.

<sup>13</sup> As noted earlier, during the crisis Colombia (\$6.2 billion), Mexico (\$73 billion), and Poland (\$33.8 billion) have obtained committed lines of credit through the FCL. None of the credit lines were drawn.

billion that was drawn through the Federal Reserve swap facilities in late 2008? Unless there is a way to ensure resources that are nearly unlimited – as the swap lines are – it is hard to see how a supranational institution would be able to meet the demand for foreign currency in the case of a truly systemic event.

This brings me to the final option: the Federal Reserve itself provides the dollars through swap facilities. This is not only feasible, but given the enormous benefits accruing to the United States from the Global Dollar system, there is a sense in which it is just. To understand why I say this, we can do a rough accounting of the benefits and costs the US faces.

The benefits are a combination of reduced financing cost and the ability to run very large current account deficits to meet demand. On the first, the current consensus is that the United States receives a financing benefit in the range of 0.5 percent of GDP per year.<sup>14</sup> While, based on some rough calculations, it is possible to show that a current account deficit of between 2 and 2½ percent of US GDP is sustainable for years to come.<sup>15</sup> Adding these together, I conclude that the US gross benefit from being the issuer of the reserve currency is on something like 2½ to 3 percent of US GDP per year. Since the United States represents 23 percent of world GDP, this equals something in the range of 0.6 percent of global GDP.

Turning to the costs, the first and foremost is that this demand for reserve currency assets tends to push the value of the currency up and encourage borrowing from abroad. This flip side of the current account deficit has distortionary effects on the domestic economy. It creates sectoral imbalances, disadvantaging both export industries and domestic import competitors; and, in the process, it encourages borrowing from abroad. As we saw during the recent financial crisis, the latter can be particularly damaging if and when the leveraged asset prices turn from boom to bust. But it is difficult to see these as being even the same order of magnitude as the benefits.<sup>16</sup>

<sup>14</sup> This number is in substantial dispute. I have used the very conservative estimate of 50 basis points from Curcuru, Thomas, and Warnock (2013). Dividing foreign holdings of \$14.6 trillion from the TIC data by 2014 GDP of \$17.1 trillion and multiplying by 50 basis points yields 0.5 percent.

<sup>15</sup> See Cecchetti and Schoenholtz (2014a).

<sup>16</sup> A few years ago, a group of researchers at the McKinsey Global Institute put everything together and concluded that the net benefit to the United States is in the range of 0.5 percent of GDP. Their estimate seems quite small as a consequence of the fact that they treat the current account deficit as primarily a cost to exporters and import-competitors who supply less rather than a benefit to households that can consume more (for a very long time). See Dobbs et al. (2009).

In fairness, the rest of the world does gain from the existence of a reserve currency. The easiest benefit to see comes from the fact that the dollar is the *de facto* international numeraire. What this means is that, instead of having  $n(n-1)/2$  currency markets, we only need  $(n-1)$  with the US dollar as the other side of each. For a world with at least 150 currencies, that's the difference between 149 markets and 11,175. This is why the US dollar accounts for one side of nearly 90 percent of foreign exchange transactions. Even if there were no reserve currency, the market would create one simply as a way to reduce transactions costs. But it is hard to see these benefits as being anything close to the costs.

The natural conclusion is that, so long as the dollar remains in widespread use outside of the United States, the central bank liquidity swaps should be part of the Federal Reserve's permanent tool kit.<sup>17</sup> But, if that is to be the case, we will need to address a number of problems analogous to those faced by the domestic lender of last resort: moral hazard, adverse selection, and overstepping of one's mandate. On the first, if they have a backstop, countries will be tempted to allow their banks to provide too much foreign currency liquidity insurance to facilitate trade and capital flows. Controlling moral hazard will require a combination of international standards that restrict activity and a sufficiently high price charged by the Fed for the dollars – a penalty rate à la Bagehot. On adverse selection, there will have to be some mechanism for ensuring that the least creditworthy countries aren't the ones at the head of the line asking to swap their compromised currencies for dollars. Something similar to the IMF's prequalification mechanism may ultimately be required. And, since relying on an external organization is likely to be even more politically charged than doing it at home, one of the costs of being the supplier of the reserve currency may be that the Fed will have to employ a small staff of people who evaluate whether a country qualifies for a swap line. As for stepping on other people's toes, the US president may well view providing dollars to a foreign central bank, and hence to a foreign country, as foreign policy. Some people already view swap lines as beyond the bounds of the Fed's agreed activities. Political support for a broader extension of dollar liquidity provision is not in evidence.<sup>18</sup>

Among the many lessons that we learned from the events of the last decade is that a financial system requires a lender of last resort. Domestic financial stability requires having a central bank that can provide

<sup>17</sup> For a summary of the debate, see Truman (2013).

<sup>18</sup> There is also what I would consider to be a legal detail. The swap lines are the responsibility of the FOMC, and they require annual reauthorization as a matter of law, so permanence cannot be assumed.

domestic currency to ensure the system remains liquid. By the same token, if we are to continue to benefit from the movement of goods, services, and capital across borders, then we need a system that efficiently allocates the foreign exchange risk arising from the transactions that support these activities. And, the facilitation of cross-border transactions and the allocation of the associated risks inevitably requires that banks provide liquidity insurance in foreign currency. In the vast majority of cases, this means dollar liabilities. Ensuring financial stability in such circumstances requires that, when they face a liquidity crisis, banks outside the United States have access to dollars. So long as the global financial system runs on dollars, something that is likely for some time to come, it is to the benefit of the United States that the Federal Reserve finds a way to provide such access.

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## Perspectives of the Fed's Role in International Crises

Guillermo Ortiz

### 8.1 Introduction

I would like to thank the Dallas Fed, and particularly my friend Richard Fisher, for inviting me to participate in this roundtable.

These are challenging times for central banking all over the world and, especially, for the Fed, given the weight of the US economy and the international role of the dollar.

The Great Recession and the associated Global Financial Crisis have deeply eroded the broad consensus existing previously among economists and policymakers: flexible inflation targeting was considered to be the best operational rule for a central bank, and the short-term interest rate the basic, and almost unique instrument. That soothing and self-reassuring view has been seriously damaged.

In a world of near-zero interest rates, central banks have had to rely on unconventional policy tools – balance sheet expansion and forward guidance – to sustain aggregate demand. The Fed has played a pioneering and successful role in that respect.

It is now also clear that advanced economies are not immune to the financial instabilities that were of the essence of financial crises in emerging countries during the 1990s.

Financial stability has deep and complex connections with price stability and full employment. Whether financial stability is an objective on its own, implying complex trade-offs with inflation and output, is a controversial question. Certainly, macroprudential policies can address financial stability issues, but no doubt monetary policy could influence risk taking and contribute also to the fragility or strength of the financial system. In this context of intellectual reappraisal and policy experimentation, the question of the international role of the Fed has acquired a new dimension. Like that of

any central bank, the mandate of the Fed is essentially domestic. In a strict sense, and notwithstanding the fact that international financial stability is a public good that any responsible national government may want to protect, any central bank should be concerned with international financial issues only to the extent that it affects domestic inflation and output.

However, it is difficult for a central bank to plug into its own decisions the consideration of their spillover effects on international financial markets and, even more so, the feedback on its own economy of such spillovers – the so-called spillback. This issue is paramount for the Fed notwithstanding its domestic legal mandate, given the international role of the dollar, as evidenced for example by the deep concerns existing today, especially among emerging countries, about the impact on international capital flows of a gradual reversal of the Fed's basic monetary policy.

## 8.2 The Fed's Role in International Crisis Management

To get some insights, it could be interesting to reassess the Fed's role in past international crisis management. I would like to make some remarks on this issue from the viewpoint of someone directly involved in the management of the 1994–95 Tequila Crisis and the impact on Mexico in 2008–09 of the Lehman Brothers collapse.

Due to the depth and breadth of the economic interaction between the two countries, Mexico has a special relationship with the United States and the Bank of Mexico also has a special relationship with the Fed ... and, even more so with the Dallas Fed as my friend Richard Fisher knows well. As observed over time, GDP growth, and particularly industrial production, in the United States directly impact output and employment in Mexico since our exports to the United States represent 23 percent of our GDP.

Interest rates and liquidity in US financial markets are key factors in determining the volume and composition of capital flows into Mexico: given the openness of the Mexican financial sector and the size of the US one, arbitrage is wide and fast, and it is almost impossible for Mexican monetary policy to significantly diverge from the Fed's. Over time market swings favored by financial integration with the United States have historically been a factor explaining the dynamics of Mexican financial crises, which have frequently been a sort of advanced indicator of financial trouble in other emerging economies. But, economic events in Mexico also impact the United States.

For example a downturn in Mexico has traditionally induced migration to the United States and a sizable negative impact on economic activity in

southern Texas, given the real integration across the border economies. And the international contagion effect of financial crisis in Mexico has been a factor of concern for the Fed. For those reasons, Mexico has probably been in the Fed's agenda more than other emerging countries, as evidenced in its role during the 1994–95 and 2008–09 financial crises.

The causes of the Tequila Crisis are well known and out of the scope of this panel. I want just to say here that it was a paradigmatic banking crisis.

In a context of bullish expectations created by the upcoming NAFTA, capital inflows induced a bank lending boom to the private sector. Banks had just been privatized, financial regulation was weak, and macroprudential policies were badly institutionalized. Systemic risks were widespread, as evidenced in a mismatch of currencies and maturities.

However, the immediate cause of the crisis, in addition to the deteriorating political environment, was a deep change in the Fed's monetary policy from early 1994 on: the fed funds rate increase from 3 percent in January to 6 percent in December. In retrospect, given the impossibility to have in Mexico a monetary policy opposed to the US cycle, the optimal reaction should have been a change in the exchange rate regime (from managed to free float), supported by contractionary monetary and fiscal policies.

An underestimation of the length and depth of the Fed's turnaround, the political difficulty of a severe fiscal adjustment in an election year, and the concern of the Bank of Mexico about the impact of a sharp devaluation and high interest rates on an already fragile banking sector delayed the proper policy reaction and led to a full-fledged financial crisis.

Certainly, a better exchange of views between the Bank of Mexico and the Fed during 1994 would have been welcome. However, once the crisis exploded in December 1994, the role of the Fed was a key element for controlling and overcoming it. Three elements were of importance:

1. First, a sizable swap line between the Bank of Mexico and the Fed amounting to \$4 billion, although the size and conditions for use were more like “window dressing” than a source of actual liquidity. However, the signaling effect of the Fed's support in the critical circumstances of early 1995 was very important to increase the credibility of Mexico's adjustment policies.
2. Second, the New York Fed's direct involvement in designing and implementing the trust fund that was to channel the revenues from Pemex oil exports as a guarantee for repayment of the loan granted from the US Stabilization Fund. That trust could probably have been put in place in another institution, for instance a large private US bank,



but the fact that the New York Fed was involved had also a strong signaling effect.

3. Third, good will. This may have been the least tangible but most important contribution of the Fed to the external financial package that was put in place to support Mexico's adjustment policies. As some of you may remember, the size and speed required for an efficient financial package was inconsistent with traditional IMF mechanisms and direct involvement of the US government was necessary. When the US Congress backed away, President Clinton and the Treasury decided to mobilize the executive Stabilization Fund. Since the number of \$50 billion was floated around in the Congress deliberations and became the magical size of the required package in the minds of financial markets participants, that number had to be reached and \$20 billion had to come from the Stabilization Fund (\$17.5 billion came from the IMF, the largest contribution ever at that time).

Even though the Stabilization Fund is out of the scope of the Fed, it is clear that the Executive Branch would not have authorized it without the open support of the Fed. Undoubtedly, the constant institutional involvement of the Fed in the discussions between Mexican authorities and United States and IMF officials, the analytical contribution of its staff, and the personal good will of its Chairman made it possible to put together expeditiously a new kind of policy and support package to deal with a deep financial crisis in a big developing country.

It is well understood that this package became a reference when dealing with Asian crises and almost a "cookie cutter" for the IMF design of the corresponding international support and domestic adjustment policies. Perhaps things would have been bumpier if the first financial crisis of this kind (a banking crisis in a globalized economy) had taken place in Asia and not in Mexico, because the Fed's involvement in the design and implementation of the financial rescue package might have been less justified in a faraway country than in the case of its southern neighbor.

Another example, albeit much less dramatic, of the Fed's international role in Mexico refers to the 2008–09 financial crisis. Mexico, as most large emerging economies, did not suffer severe financial dislocations, at least not to the extent of developed economies. However, in the immediate post-Lehman Brothers collapse period, risk-averse capital flew out of the country, the exchange rate was left to float, and turmoil was apparent in derivative markets. In this occasion, coordination between the Bank of Mexico and the Fed was expeditious and efficient. The Fed was acting

as a lender of last resort providing through central banks in developed countries (mostly in Europe) dollar liquidity in the face of an abrupt shrinking of money markets. The Bank of Mexico asked the Fed to put in place a large swap line between the two central banks to temper volatile expectations. The Fed was concerned about the possible spillover effects of the US crisis on Mexico (the first time things moved in that direction). We agreed on a \$30 billion swap, but, as opposed to the line put in place in 1995, that swap was not window dressing but an effective credit line, the first of its kind in the case of emerging countries. We used it up to \$3.5 billion, not because we needed it, but to show the markets that it could indeed be disposed of. The impact on expectations was immediate. In order not to single out Mexico (which neither we nor the Fed wanted to do), this facility was extended to some other emerging countries, especially in Asia.

### 8.3 Lessons from These Episodes

I think the two episodes I just briefly discussed provide some interesting perspective on the Fed's role in international financial crises. I would emphasize three lessons:

First, the Fed's monetary policy works as a very stringent restriction for the definition of Mexico's monetary policy, in the sense that any sustained deviation quickly tends to backfire through instabilities in the Mexican financial sector. Historically, the Fed has played a key role in supporting Mexico during various episodes of financial crisis, mostly through good will, signaling effects, and, occasionally, some more direct participation. To a large extent, the involvement of the Fed was justified because of the deep integration of the Mexican and the US economy. Looking forward, one can hope that the role of the Fed in Mexico will be less through a key support during crisis episodes and more through an ongoing cooperation to avoid them.

Second, as it has been widely acknowledged, the mandate of the Fed is domestic even though the spillover effects of its decisions are global. No matter how perverse or undesirable this situation may be, it is a fact of life derived from the evidence that the dollar is the reserve currency of the world. No matter how beneficial the international role of the dollar may be for the US economy, the reserve status of the dollar is not a decision of the US government but a decision of international financial markets, so one cannot realistically expect that the Fed can alter its policies only because of its international consequences: that is the basic foundation of the

often quoted famous remark by John Connally, President Nixon's Treasury Secretary, to a European delegation worried about exchange rate fluctuations: "the dollar is our currency, but it's your problem."

Of course, the Fed does care about international financial stability, not only because of some sort of benevolent concern, but mostly because it affects the dynamics of the US economy in obvious ways. In the short run, as recent data show, slow global growth has reduced export demand for US products and to some extent foreign earnings of US corporations, acting as a strong headwind for the US economic recovery.

In the longer run, it is clear that financial stability in a large country is interlinked with financial stability globally and, thus, enhanced international cooperation among regulators is required in a post-Global Financial Crisis world. Impressive progress has been made in some areas but further progress is required in the most difficult and complex ones.

To the extent that a central bank shares responsibility for the regulatory oversight of the banking system, the financial stability objective has a significant effect on monetary policy discussions; from an a priori viewpoint, you may want monetary policy to internalize its effects on financial stability, mostly through its impact on risk-taking in some pockets of the financial sector, but one must acknowledge that these are new and difficult issues which are just being explored. Aiming to attain the dual goals of maximum employment and stable prices, while maintaining domestic and, even more so, international financial stability, requires dealing with new practical challenges that involve assessing extremely complex analytical issues. That is a daunting institutional and intellectual endeavor that may go beyond the scope of the Fed's mandate.

Third, one must acknowledge that the IMF is the only international institution that has a legal mandate to look after financial and economic stability globally. In the case of Mexico's financial crises, the effectiveness of the Fed's ad hoc role was increased because it was part of a wider effort formally and explicitly conducted by the IMF. In the future the Fed's role in financial crises, in avoiding them or confronting them, cannot be conceived without an enhanced cooperation with the IMF, but with a strengthened IMF. As the global economy becomes more interconnected, more balanced in terms of income shares, and more uncertain, the capacity to react efficiently and in a coordinated fashion to crises which are global in scope will be key in avoiding huge welfare losses. This implies making the IMF governance structures more "cooperation oriented" and fair; enhancing its analytical framework to incorporate new

cross-border transmission channels and enhancing efficient “early warning indicators”; increasing and making more flexible crisis response facilities and resources; endowing it with the proper tools to achieve traction in risk mitigation through collective action; and, if warranted, extending its mandate to fully cover all potential sources of systemic global risk, including capital account dynamics.

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