Yale SCHOOL OF MANAGEMENT
Program on Financial Stability

Lessons Learned Oral History Project Interview

Interviewee Name and Crisis Position	Nathan Sheets[1] Former Director of Division of International Finance, Federal Reserve Board of Governors
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Introduction:

The Yale Program on Financial Stability (YPFS) contacted Nathan Sheets by email to request an interview regarding Mr. Sheets's time as Director of Division of International Finance at the Federal Reserve Bank.[2]

During the Global Financial Crisis, Mr. Sheets oversaw the operations of the Division of International Finance and advised the Federal Open Market Committee on economic and financial developments in foreign countries as well as on the U.S. external sector. He also regularly represented the Federal Reserve Board at international meetings and in its contacts with foreign central banks. Under his helm, the division was involved in helping establish and manage the liquidity swap lines with foreign central banks.

Mr. Sheets's career at the Federal Reserve Board, which he began as an economist in 1993, spanned 18 years. In 1999, he became a section chief within the Division of International Finance and, in 2001, was appointed to the official staff. He was named division director in September 2007. Mr. Sheets has also served as a senior adviser to the U.S. executive director at the International Monetary Fund.

Mr. Sheets is currently Chief Economist and Head of Global Macroeconomic Research at PGIM Fixed Income. Before PGIM Fixed Income, he served as undersecretary for international affairs at U.S. Department of Treasury's Office of International Affairs. Mr. Sheets had earned his PhD in economics from the Massachusetts Institute of Technology.

This transcript of a phone interview has been edited for accuracy and clarity.

YPFS: For the record, what was your role during the global financial crisis?

[1] The opinions expressed during this interview are those of Mr. Sheets, and not those any of the institutions for which the interview subject is affiliated.
[2] A stylized summary of the key observations and insights gleamed from this interview with Mr. Sheets is available in the Yale Program on Financial Stability's *Journal of Financial Crises*.

Sheets: I was the Director of the International Finance Division at the Federal Reserve Board from September of 2007 until August of 2011. My predecessor announced her retirement in May of 2007 and I told her it was the best to forecast of her career. I do not know whether starting at that particular time was the best forecast or the worst forecast I ever made, but it certainly was right at the beginning of a very interesting time.

YPFS: And how did you help fight the crisis?

Sheets: The International Division was involved in a number of dimensions. Probably the most high-profile aspect of what we were doing was helping establish and manage the liquidity swap lines with foreign central banks, including the four swap lines with the emerging market economies. Secondarily, we had a lot of contacts in the international community and did a fair amount of reaching out and diplomatic work with key counterparts in other central banks, finance ministries, and elsewhere around the world, explaining what was happening in the United States, explaining what the Federal Reserve was doing, what our rationale was, the policy decisions they were making and so forth.

Third, and I am abbreviating, the third major class of contributions we made to fighting the crisis, was that we were monitoring global economic and financial developments including the dollar and commodity prices. We were, like our sister divisions, monetary affairs and research and statistics, regularly reporting to the [Federal Reserve] Board and the Federal Open Market Committee (FOMC) as to what was going on. So, we were helping establish and articulate the context and the backdrop against which the FOMC was making many of these decisions.

YPFS: At what point in the global financial crisis period did it become apparent that the swap lines were needed to be established between Europe and the U.S.? What were the indicators there?

Sheets: This is a very interesting question. When I started in this position in September of 2007, I found in one of the drawers an email that my predecessor had left for me. It was something to the effect that, when this disruption was over, and she and I and most people thought in the fall of 2007 that this would be a relatively short lived affair, then maybe it would make sense to phase out some standing swap lines we had under the North American Free Trade Agreement (NAFTA). It is called the North American Financial Agreement with Mexico and Canada.

So, even at that point in September, though there had been some discussions earlier that maybe we should have some swap lines, it was not clear. However, as we moved on through the fall, it became apparent that the stresses and the tensions would be more persistent than what we expected, that they proved to be much broader than anyone could have foreseen even a few months earlier, that we needed some extraordinary tools to help provide dollar liquidity around the globe and particularly in Europe. It became increasingly clear, throughout the fall, that these tools were necessary. Then the FOMC moved in early December at a conference call, an ad hoc meeting to implement them.

YPFS: And what were the signs that you saw that made you realize this is the time to do it, that this was really necessary?

Sheets: We were seeing ongoing spikes in the Libor-OIS spread, which was an indication of tightness in funding markets. Another concern that people had was that the Federal Funds Rate was very unstable and that, specifically, it was spiking during the morning. There was a mad dash from European firms to come in and grab the liquidity and this was bidding up the Fed Funds Rate. Then, as the day progressed and that liquidity demand had been satisfied, and, importantly, once the European market was closed, the Fed Funds Rate would crash back down. So, we were seeing a lot of volatility in the Federal Funds Rate. Those were the two key indicators that we were looking at. More broadly global financial market conditions through that period were disrupted and the Fed had taken some steps to ease funding conditions, but it was not clear that this liquidity was getting to the European institutions that were hungry for it as directly as it might.

YPFS: At one point, the cap was removed from the swap lines. Was there any concern when removing these caps, especially since so many financial institutions in Europe receiving these funds had failed to manage risk in the lead up to the crisis?

Sheets: [This is a] very important question. When you go back and look at the FOMC transcripts and recall the conversations [at FOMC meetings,] you would see that there was a lot of concern in the FOMC when we introduced the swap lines. These involved questions such as the necessity for these swap lines, that maybe it was stoking moral hazard or other concerns. At the end, a large majority of the members of the FOMC ended up approving those lines. They were initially approved in December of 2007. However, as we moved through 2008 and the situation became more severe, we expanded the program, added counter parties, and raised borrowing limits. All of these happened with rationales that the members of the FOMC found to be compelling, that they thought there really was a need for this liquidity in the global system.

Finally, these lines were uncapped after Lehman's failure and at that point the stresses in the global financial system were truly, truly remarkable, probably the most severe that we have seen at any time since the Great Depression. In that environment, the case to provide this liquidity seemed compelling, and it was quite effective. The moral hazard concerns were partially attenuated by the pricing of the liquidity. It was priced above what the liquidity would have cost during normal times, and indeed, as the crisis ended, the rate on the swap line was reduced. So, there was pricing to help with the moral hazard.

However, another issue was the way these lines were structured. They were structured such that the Federal Reserve was lending to the foreign central bank and then the foreign central bank was using its regulatory, supervisory, and other tools to evaluate the credit worthiness of the institutions that were applying. So, the Federal Reserve was very aware of that risk and it was using the foreign central bank, which, in most cases, was the regulator, [to decide who to extend liquidity to.] If the foreign central bank was not the regulator, it was very plugged into the regulatory community in that jurisdiction and was able to make the sorts of judgments about credit worthiness [of a bank] and whether it was a firm that was insolvent or one that was just illiquid. That feature of the structure of lines was also seen, very importantly, as protecting the Federal Reserve's balance sheet, because the Federal Reserve had exposure to a major foreign central bank, not to any individual institution. If, indeed, some institution had failed, the foreign central bank would have had an exposure to deal with, but that foreign central bank would still have been responsible for unwinding the swap with the Federal Reserve.

Further, we were also holding the foreign currency. So, the pricing and the structure of swap lines, we felt, limited the moral hazard. Even if there was some of that risk that was residual and that was not extinguished (and we thought most of it had been extinguished) given the extraordinary pressures in the global financial system, we felt that the case for the swap lines was compelling and that the credit risk or the broader risk for the Federal Reserve's balance sheet was limited. When you look at the FOMC transcripts and recall the debate that the Fed had at that point, the decision on removing the cap was really not very controversial. It was seen as a reasonable step to address the extraordinary stresses in the system.

YPFS: **As far as I understand from your papers I have read; it was found to be necessary to do this as much for U.S. interests as for the foreign countries' interest. Did I get that right?**

Sheets: I would say that there were very significant components of this that were motivated by concerns for U.S. financial markets, in addition to concerns for global markets. However, I would argue that the rationale for the U.S. market would have been sufficient to do the swap lines, even if there had not been the broader concerns about the global system. One of those reasons is the argument I made above about the stability in the Federal Funds Market and, frankly, the stability in U.S. money markets more broadly. Had those markets become disrupted in a sustained and severe way, even more severely than what had happened until then, that certainly would have had meaningful spillover effects into other major financial markets. Some of that happened during the crisis but it could have been worse. I think that the swap lines helped contribute, along with a number of other policies that the Fed pursued, to the stability in money markets in the United States as well as around the world, and hence to the stability of U.S. markets.

Another angle would be, considering the foreign effects, if there were meaningful significant disruptions in foreign markets, it was very likely to feed back into the United States, into our economy, into our markets. Clearly, what was happening in the rest of the world had huge implications for the outlook for the United States. There was a direct effect of trying to protect the stability of our funding market, enhance our broader capital markets as well as a recognition that what was going on abroad, and that if there are disruptions abroad, they would feed back into the U.S. economy and markets and tend to amplify it. All of this made a compelling case.

There are auxiliary issues here about the U.S. Dollar as a global reserve currency. The United States does benefit and enjoy somewhat a greater demand for its assets, and likely lower yields than we would have otherwise, as a result of being the reserve currency. However, the flip side of being the reserve currency is that the reserve currency is the currency that people want to hold in the time of stress. Had the Federal Reserve not provided a meaningful increase in the monetary base that was available both domestically and internationally in response to that demand, the disruptions globally, including in the United States, would have been significant. Therefore, I do think that the Federal Reserve had a particular responsibility to help protect the global system. It was also coupled with the reality that the global system was dependent on our currency. That made what was happening abroad more crucial and interlinked with what was happening in the United States.

YPFS: **Talking about spillovers abroad, you also extended the swap lines to emerging market economies. What were the considerations and concerns regarding that?**

Sheets: For the emerging markets, there was, again, a recognition of global connectedness and that what happens abroad, including in emerging markets, which were an increasing share of the global economy, matters for the United States. I think there was also a sense that their fundamentals were somewhat stronger than those in many of the advanced economies and that they were being swept up in a contagion and spillovers. They were, in some sense, innocent bystanders and if we were going to help constrain the boundaries of this global financial crisis, providing liquidity support to those economies would be helpful and constructive. Another consideration was that many of the emerging market economies were very large holders of U.S.

treasuries. We had to consider (and this, fortunately, did not materialize during the crisis) scenarios where they would be under pressure and might need to have rapid access to the liquidity that they could get by selling their [U.S.] treasuries.

We were thinking about mechanisms that would protect the treasury market in the event of some kind of a further downturn or a shift in appetite for U.S.-oriented securities. If you read the transcript at the time that these lines were introduced, and they were vigorously debated by the FOMC, one of the rationales that people were thinking of was protecting the integrity of the treasury market. This was a recognition of interconnectedness; it was attempting to draw a boundary, to limit the global reach of the financial crisis, and keep it from continuing to escalate.

It reflected a recognition that there were steps we could take to help protect the treasury market. It was also, as you read through the debate in the FOMC, very much argued that the line between emerging markets and advanced economies was much blurrier by that point than it had been 10 or 15 years before. Therefore, the previous distinction of which countries would have swap lines and which would not was somewhat less compelling. Some of these large, well-managed emerging market economies were as strong counterparties for the Federal Reserve as some of the advanced economies.

YPFS: **You did mention that there were vigorous debates by the FOMC in the consideration of extending the swap lines to emerging market economies. How was the collaboration between different parts of different policymaking institutions such as FOMC, the Fed and the Treasury?**

Sheets: This is important. Throughout the financial crisis, there was very strong collaboration between, and this is something I am sure that you have heard from many others, the [Federal Reserve] Board and the New York Fed. In my role, I interacted particularly with Bill Dudley when he was the System Open Market Account (SOMA) manager and Trish Mosser who was his deputy and was doing a lot of the day-to-day management of the swap lines. The way I used to describe it was that, as the Board, we were thinking about the policies, how to structure these [swap] lines, how to manage these lines, and what the future of the program should look like, while in New York [Fed] they were handling a lot of the day-to-day challenges and implementation issues that arose.

In addition, we were interfacing vigorously with the U.S. Treasury. The long-established practice and convention is that the U.S. Treasury is the senior partner in setting U.S. international economic policy, in setting policies on the U.S. Dollar and in representing the United States in various kinds of international groups abroad such as G7 and G20. We interacted closely at all levels with the Treasury, Chairman [Ben] Bernanke worked closely with Secretary [Hank] Paulson and then Secretary [Tim] Geithner as the administration shifted. I worked closely with Dave McCormick and Lael Brainard, who were the undersecretaries of the Treasury for International Affairs through that period, as well as with Mark Sobel, who was the Chief International Deputy underneath Dave McCormick and Lael Brainard. We worked closely on exchange rate management.

In the summer of 2008, we were worried that the dollar was falling sharply and Chairman Bernanke, coordinating carefully with Secretary Paulson, engaged in a verbal intervention to support the dollar. The dollar soon bottomed out and actually appreciated quite dramatically through the last part of 2008 and into early 2009. We worked very closely. Another organization that is important to mention is the International Monetary Fund (IMF,) and our interactions with them, particularly on issues regarding the emerging markets swap lines. The IMF is the traditional lender to emerging market economies and it was on an extraordinary basis that the Federal Reserve was considering this kind of a financial facility with some of the leading emerging markets. Our sense was that, at that point in time, the IMF did not have yet, and had not yet developed, a large, rapidly dispersing liquidity instrument that would be appropriate for these very high quality emerging market economies. An instrument that these emerging market economies would actually be willing to tap…

As we were moving in this direction, we consulted closely with the IMF, and the IMF moved to establish a new instrument, which it announced in tandem with our announcement of the swap lines for the emerging market economies. These swap lines really were exceptional, and they reflected our judgment that, at that point in time, the IMF did not have an instrument that would meet the needs of these countries, which they would actually tap into.

One final point that is useful [to remember] here is that, before the Federal Reserve and the FOMC approved these emerging market swap lines, Chairman Bernanke consulted with [Treasury] Secretary Paulson and with Secretary [of State Condoleezza] Rice to get their reactions and broad buy-in. It was ultimately a Federal Reserve decision and the Federal Reserve was very much aware of protecting its independence through this, but [Bernanke] discussed this [with Paulson and Rice] and got their buy in. From their perspective, these swap lines would be consistent with the economic policy interests of the United States and the foreign policy interests of the United States. So, we, particularly on that issue, coordinated closely.

As I said, I was working closely with counterparts at the Treasury and, in this case with counterparts at the State Department, to do all we could to ensure that these lines were broadly supportive of U.S. interest as well as achieving the very important economic and financial objectives, which I outlined earlier.

YPFS: **How was the collaboration with the other central banks? Because at one point, I understand that they looked at the whole crisis as a U.S. crisis, so was there any resentment from them?**

Sheets: When the crisis first erupted, particularly in Europe, it was viewed as a U.S. crisis with some spillovers into the European markets. Originally, the European Central Bank (ECB) wanted the swap lines structured in a way that made it seem like the ECB was only passively acting as an agent for the Federal Reserve in Europe. That was a welcome structure from the perspective of the Federal Reserve as the ECB was taking dollars and then deciding which European institutions to lend to, taking the credit risk onto its balance sheet. Because it wanted to be seen only as an agent, it was simply remitting whatever it was being paid back to the Federal Reserve. It actually meant that the structure of these lines allowed the Federal Reserve to earn more than it might have, had they had been splitting the proceeds. Early on, the ECB wanted to look at it more as a U.S. only phenomenon, but as 2008 evolved, especially during the second half of 2008, it became clear that this really was a global phenomenon.

During the summer of 2008, the ECB hiked rates. I think they were hopeful in mid-2008, as commodity prices were rising, that maybe we were looking at the worst of it through the rear-view mirror. However, then, following the Lehman collapse, with enormous global spillovers, there was a broader realization that there would be adverse spillovers to other parts of the world, and that other parts of the world had similar kinds of underlying problems in their financial system.

Yes, U.S. banks were holding opaque instruments that they did not fully understand, and the risk properties of those instruments ended up being more complicated and nonlinear than what they had expected. However, exactly the same thing was true of many European institutions. Just as U.S. financial regulation had fallen short, European regulation had fallen short as well. So, as we moved into second half of 2008 following the Lehman crisis, we saw very severe dynamics which were essentially as intense in Europe as they were in the United States. At that point, the ECB really became a partner with the Federal Reserve in fighting the crisis. The watershed of that was in early October. There was a coordinated rate cut between the United States, the ECB, the Bank of England, and I believe the Bank of Canada was also part of it. Because rates in Japan were already low, the Bank of Japan did not cut rates but released a statement indicating that it was supportive.

Chairman Bernanke made clear in some of his discussions with the FOMC that one of the things he was trying to do with a coordinated rate cut was, allow [the then-president of the ECB] Jean-Claude Trichet to go to his committee and say, "All these other central banks are moving to stimulate, let's join them" and to give Trichet a way of exiting from what he thought, a few months before, was a hiking cycle. So, part of the strength and power of that coordinated rate cut was that it freed the ECB to cut rates more vigorously.

Following that coordinated rate cut, the ECB did ease policy and cut rates dramatically. The Bank of England cut rates dramatically as well, and the world had a very meaningful easing of monetary conditions.

It was a little bit uneven and it was a little bit choppy in terms of the global ownership of the crisis and, to some extent, even the global coordination during that first year. However, once you hit that Lehman inflection point, all central banks were 100% in and full partners in fighting the crisis. It was a realization that, yes, maybe there were certain U.S.-oriented features to this, but it was transmitting and escalating around the world because regulatory policies in essentially all of the major economies, at least in advanced economy jurisdictions, had fallen short.

There were a few countries that were not hit as hard. The Japanese banking system was sort of crawling out from some of the challenges they had faced earlier. They did not have the same kind of excesses on their balance sheets and so they weathered it relatively well. The risk-taking appetite for the Canadian banks was never as great as it was for U.S. banks and they were, as a generalization, able to perform somewhat better. The Australian banks had some severe liquidity problems, but, more broadly, seemed to fare pretty well. For the Australian banks, the swap lines were particularly crucial for helping ensure their continued smooth operation and access to the liquidity that they needed. In general, this was very much seen as a global crisis and everyone was at the table looking at the issues and thinking about how they could do their part to help remedy it.

YPFS: **You write that this cooperation also had a calming effect on the markets. Could you please elaborate on that, how it was important to fight the crisis?**

Sheets: From the swap lines that were introduced in December of 2007 all the way through to the uncapping of swap lines, from the associated policies that were put in place after the Lehman collapse to the G7 declaration, where the G7 countries essentially jointly guaranteed the liabilities of their banking systems, which was an extraordinary intervention, none of these interventions had an immediate conclusive effect on the stresses that were being felt and that characterized the financial crisis. However, all of those things put together laid the foundation for an improvement of conditions which we finally saw in the first half of 2009, which is when we started seeing a few more green shoots, a few more positives, along with the beginning of quantitative easing (QE,) etc.

That certainly continued to take hold through 2009 and into early 2010. So, it is hard to partial out any single action's effects. With all of that being said, what we did see was that, as the central banks took steps with swap lines, each launch of the swap lines tended to be well received by markets for a period. The market seemed in particular to take heart from the message that the major central banks were aware of the challenges and were working closely together to address the stresses. That was received and was appreciated by market participants.

There would be a temporary lull in some of the tensions, but then something new would happen, some new shock, some new revelation of imbalance in the market, some other problem and then things would again escalate. As I said, at the end of 2008 it was kind of an upward trajectory and these swap lines were well received by the markets when they were announced. That was constructive.

Secondly, as we expanded the swap lines, we saw meaningful effects on the Libor-OIS spread, which was, broadly speaking, a measure of stresses in funding markets, measuring how dysfunctional the funding markets were or how difficult it was for financial institutions to get the short term financing they needed to carry on their operations. These swap lines seemed helpful and constructive there.

My reading of the evidence, and this is a little debated by various folks, is that the emerging markets swap lines helped reduce stresses in those emerging markets that received them, particularly notably in Korea. The Koreans feel that the swap line that they received was particularly crucial in helping them survive the financial crisis. I think there is also at least a bit of evidence that the swap lines helped support emerging market confidence more broadly and contribute to improvement in conditions in emerging market spreads also in other countries that did not receive the swap lines.

YPFS: **In an interview with the Dallas Fed in 2009, you mentioned that one of the reasons for the crisis to spread globally was because one, the financial markets of various countries were very integrated and secondly, countries were also integrated through trade, which I thought was really interesting. Is this still the case? Are the countries still so integrated? And if yes, how can we prevent a future crisis like the one that we had from spreading like California wildfires again?**

Sheets: I absolutely think we are integrated. I think we are seeing that in some of the effects of the ongoing trade war between the United States and China, for example. I think those channels of integration are broadly through trade and through capital markets, cross border investment and so forth. There are also other ways that we are integrated: We are culturally integrated; we are informationally integrated. We really do have a worldwide web and it allows us to have a common body of information. I really think that some of these protests that are happening around the world is reflecting that people in one country are seeing what life is like in another country. They are saying, "I want to have those freedoms. I want my life to be more like that."

There is also travel and immigration. There are a lot of different channels through which we are coming together. I think that those centripetal forces are pretty powerful. Now, that said, there are also some opposing forces of nationalism and sovereignty and reinforcing borders and national identity and protecting culture, and so forth. There is a powerful ongoing tension between the forces drawing us together and the forces that are pulling us apart. There is also a question: If we are coming together, what is the right pace? Maybe we have moved to integrate too quickly and, at least by the assessment of too many citizens, we have given up a lot of national identity. These are the debates that we have to think through.

However, I certainly believe that we are very integrated. I think we see that in the behavior of our financial markets on a daily basis. What happens in the United States matters for what happens in the rest of the world and vice versa. Those statements are even probably truer today than they were a decade ago. As I had argued [in that article,] they were much truer in 2007, 2008, 2009 than they were in the '90s.

Your question of how do we, in these circumstances, protect ourselves from another first order global blow up? The best protection is to do what we can to learn the lessons of the global financial crisis. The number one lesson that policy makers need to learn and need to put in their pocket, which I think we did not do as effectively in the policy realm in the years before the financial crisis as we could have, is to always be curious and ask questions.

Why are things the way they are? What are the underlying drivers? What are the risks? What could go wrong? In the years before the financial crisis, I used to write briefing memos regularly for members of the Board and other senior officials who would go to Bank for International Settlements (BIS) meetings in Basel, Switzerland. I would write about the efficient U.S. financial sector and its ability to move risk from those that want to borrow to those that are most capable of bearing that risk. However, I did not, and nor did enough other people, take the next step and say, "Well, who is more capable of bearing this risk? Where is this risk landing in the system?" I do not think that, as we were talking about "those more capable of bearing the risk," we were thinking about off-balance-sheet investment vehicles of large financial institutions.

So, we must be curious. We must ask what is going on and why, what the underlying drivers are, and not just assume that the markets are allocating optimally. I think, in general, markets do allocate optimally but there are excesses and imperfections that we need to be aware of. That is number one. Number two, I think that financial regulation needs to be engaged and thorough. It is much improved now, relative to 15 years ago. The stress tests are powerful tools in assessing what might go wrong and what it would mean for the financial system.

Similarly, there are always going to be things that happen that we cannot foresee and that we cannot predict. For that reason, banks need to be adequately capitalized. There is a legitimate debate as to what "adequately" means, but it is clear that they needed more capital in them than they had at that time. We certainly have achieved that. At the end of the day, crises will almost inevitably occur. At that point it is going to be an issue of how quickly and how well we respond. Another thing, I would hope, is that our experience as policymakers during the financial crisis lays a helpful predicate for those who come after us. Hopefully, they will be able to draw on our experience and be able to get to the right answer faster and more efficiently than we did.

I think we were fortunate to have Ben Bernanke, who was a student of the Great Depression, as one of the key leaders through this experience, and that he was able to draw on those lessons. It is really important that the next round of policymakers be aware of, and conversant with, what we did and why, and where they think we got it right and where they think we could have done better.

Those are the three thoughts: be more curious, strengthen regulation (somehow we need to do what we can, as we strengthen regulation, to also make sure that the support for regulation does not get meaningfully watered down–because that tends to be a bit like a swinging pendulum over time), and then third would be familiarity with history and awareness of what went wrong in the crisis and how we addressed it.

We also need to recognize that, almost inevitably, shocks are going to happen. There will be features of the economy that you assess as benign that end up being not benign, and there will be periods of stress.

YPFS: **Also during the same interview, you say that we need better mechanisms to address problems faced by very large institutions that are seen as "too-big-to-fail," that we need well-articulated resolution process for a wider range of financial institutions and not just banks. I was going to ask you to please elaborate on this and if these two points have been established since the crisis.**

Sheets: Addressing too-big-to-fail has been a first order challenge. It was a key objective of Dodd Frank. It has been a key objective of the Basel Committee and the Financial Stability Board. It is an ongoing consideration of regulators today and over the past decade. How do we know when we have been successful in addressing it? Honestly, I do not think that we are going to know until we have another round of serious shocks. That is what makes this such a difficult issue. We have done a number of things, particularly strengthening the quality of regulation, strengthening capital, particularly for large systemic institutions. One keyway to address too-big-to-fail is to capitalize them to a point and supervise them closely so that even if a big shock arises, they are able to absorb it.

Dodd-Frank had in it a living wills exercise, where these big institutions had to think about how they would be liquidated. I think it would be very challenging to actually liquidate one of the particularly large institutions. However, the reason why this has proved to be a valuable exercise is that, in the process of thinking through how they would be liquidated, these institutions came to better understand how they are organized and what their vulnerabilities might be at a time of crisis. So, I think the living wills exercise has been quite powerful. In addition, Dodd-Frank provides other kinds of tools that could be used to help provide liquidity and avoid direct public bail outs of these large institutions. However, our best protection against too-big-to-fail is making the institutions sufficiently strong so that they can absorb shocks. Consistent with your question, that has been done, to a meaningful extent, with large commercial banks.

With other kinds of institutions, the regulatory apparatus is more complicated. Dodd-Frank allowed the Financial Stability Oversight Council (FSOC) to designate non-bank financial institutions as being systemically important, but it has been challenging for FSOC to decide how to use this. The previous administration, for example, designated certain insurance companies as systemically important, but now they have been de-designated. Part of [the reasoning] was that they had made changes to their structure. However, there is a broader debate going on about how non-bank financial institutions or their activities, should be designated. It is very difficult to bring some of these other institutions under the regulatory net and subject them to the same quality and rigor of financial regulation as the large banks.

A corollary challenge, which is not exactly about too-big-to-fail, but is a similar kind of issue where the Fed's scope is limited statutorily along with who they can regulate, is that, especially as a result of Dodd-Frank, there are limitations on who the Federal Reserve can provide liquidity to during a time of crisis. I know Tim Geithner and others have highlighted this as a risk to the system and one could imagine us being in a spot where some key institutions are illiquid, and the Federal Reserve not having the tools to be able to provide liquidity.

YPFS: **About the Financial Stability Board (FSB)... Why was it needed, and do we still need it 10 years later? You touch upon this in your 2017 Peterson Institute for International Economics paper.**

Sheets: I think it was needed in 2009 when it was created because it was absolutely imperative that the problems in the regulatory apparatus that led to the global financial crisis be addressed. Given that these were global problems, they needed to be addressed in a way that was consistent across jurisdictions around the world. I think that is the bottom line: If the United States had gone and tried to address them with approach A and the Europeans with approach B and the Japanese with approach C, it would have created all sorts of regulatory arbitrage where firms would be able to structure themselves in ways to avoid regulation.

We would have ended up with a much less effective outcome. At a minimum, it would create a very confusing regulatory environment for large financial institutions who are trying to operate globally. Given the severity of the shock and the huge amount of work that needed to be done, and the fact we are all part of one global financial system, it was imperative that this be addressed on a global basis. That was the rationale in 2009 and I do think that a lot of the work that I just described has been done.

That then raises the question, "well what about the FSB in 2019 going into 2020?" First, the FSB plays a very important role in surveillance of vulnerabilities in the global system. One of its major committees is focused on studying and seeking to identify vulnerabilities in the global economy and financial system that could lead the crisis. So, it is a global effort to try to find challenges that could become disruptive. It is constructed to have everyone there around the same table in the same room.

A second feature of this is that, a lot of changes in the regulatory apparatus have been put in place, as I indicated, but I think it is also appropriate for this group to be asking themselves in a coordinated global way, "How well is this working? Are there unintended consequences where we need to fine tune or adjust? Or is there a new development that we need policy to address? Or is there something that we missed over the last 10 years that we need to address?" This thinking about the implications of all of the policies and how they should be addressed, I think, needs to happen on a global level.

A third rationale for the FSB is that, the relationships that are built working in that setting would be very helpful in the event that a global crisis erupted. During the financial crisis these strong relationships between key central bankers and other senior policymakers were one of the major reasons why we were able to fight the crisis as effectively as we were. Those relationships had been developed in groups like the FSF, which was the forerunner of the FSB, the G20, the G7, in Basel meetings, and so forth. It gives the regulatory apparatus really a wonderful opportunity to interact with each other and to build those relationships that they could draw on in a time of stress.

You could also say, "Look, the system is always evolving, and yesterday's solution is unlikely to be the same as tomorrow's solution." That would be vulnerabilities monitoring, but it may also be something a little different. This idea is to think about how this structure, this system evolves and whether we need to change where we are going. At a minimum, having a conversation about varying perspectives of the evolution of the system can be quite instructive.

Related to all of this, we have a lot of institutions that are operating in a lot of different countries. Typically, one country is the primary regulator for that institution. However, they operate in other countries, where other regulators have insights about the functioning of a particular institution and have important perspectives on the vulnerabilities of that institution, all of which are helpful for the home regulator. So, the case is strong for ongoing interactions even in a period of relative calm in the global financial system.

YPFS: **Are we better off, and more prepared, internationally to deal with a possible future financial crisis? If we are not, what can we do to be better prepared?**

Sheets: On balance, I think we are better prepared. First, we have as prologue, the experience of the global financial crisis so we have more previous experience to draw on. One of the challenges in the crisis was that we were faced with many issues that really struck us as novel and unprecedented. The experience of 2007, 2008, and 2009 will stand as an important body of experience for financial policymakers and economic policymakers in the years ahead. So, we have that experience.

Secondly, I would say that we are better off because the core of the banking system is much better capitalized, as I have indicated, and the quality of regulation is light years better. The philosophy of regulation previously–that markets would get it right, that financial institutions had incentives to govern themselves and to evaluate risk–is fine as a first order proposition. However, we also need to be constantly aware of the reality of marketing imperfections and limitations and excesses. The quality of regulation is much better.

Third, even beyond that, the experience of the financial crisis, at least for now, continues to weigh on the minds of managers in large financial institutions. They are just more prudent, over and above the regulatory changes. They are managing their balance sheets in more conservative ways. [The crisis] is remembered throughout the business community and it has been a disciplining device. There has been a meaningful change in economic behavior.

I still think there is a challenge in terms of governance of large institutions. The theory states that the boards of these institutions should be vigorously engaged and aware, not just rubber stamps of what the management of the institution is doing. We have made some progress there, but I think that there is still a ways to go. It is hard to say what else we need to do. The major thing, I would say, is we need to make sure that we do not now meaningfully dilute many of these reforms that have been put into place.

I am also particularly worried about the Federal Reserve's capacity to be able to provide liquidity to a broad class of institutions beyond the banking sector during a time of stress. That is a concern.

I am also worried that no two crises look alike and so we always have to be aware and doing surveillance. I think the surveillance is being done now more methodically and more intensively than before. An example of that is that the Federal Reserve now publishes twice a year a financial stability report where it is doing the kinds of analysis that were not being done as systematically as they could have been before the financial crisis.

The IMF also does those kinds of reports as do many other central banks. So, I think the quality of surveillance is much better, but we have to continue to seek to think creatively and ask ourselves this question: Where could the trouble come from or what is hiding underneath this rock and that rock? So, on balance, I think we are in a better place. I worry about the liquidity capacity of the Fed at a time of stress, about the reality of no two crises looking alike, and whether we will recognize the indicators that we are moving back into harm's way.

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