Yale SCHOOL OF MANAGEMENT
Program on Financial Stability

Yale Program on Financial Stability
Lessons Learned Oral History Project Interview

Interviewee Name and Crisis Position	Susan McLaughlin[1] SVP and COO, Market Operations, Monitoring and Analysis Function, Markets Group, Federal Reserve Bank of New York
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Introduction:

The Yale Program on Financial Stability (YPFS) contacted Susan McLaughlin by email to request an interview regarding McLaughlin's experience at the Federal Reserve Bank of New York during and after the Global Financial Crisis.[2] As head of the discount window at the New York Fed in 2007, McLaughlin was deeply involved in the implementation of the Fed's policy response to the disruptions to secured and unsecured funding markets during 2007 and 2008. Following the crisis, she led efforts under former New York Fed President Bill Dudley to work with the industry to implement changes to the design of the triparty repo market's settlement infrastructure that were instrumental in improving the stability of that secured funding market.

In this interview, McLaughlin discusses the Fed's emergency lending operations during the Global Financial Crisis, triparty repo market reform, drivers of the Global Financial Crisis, lessons learned from 2007-08, and the Fed's programs in response to the COVID crisis during 2020.

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

Transcript:

YPFS: **Susan McLaughlin, Senior Vice President, New York Federal Reserve Bank, thank you for joining us. If you could please describe experience of**

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[1] The opinions expressed during this interview are those of Ms. McLaughlin, 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 Ms. McLaughlin is available in the Yale Program on Financial Stability's *Journal of Financial Crises*.

monetary operations, going back to the financial crisis of 2007 and 2008. Looking back now, 12 years later, how did it **shape your outlook?**

McLaughlin: Sure. First, I should say that the views I'm sharing today are my own, and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

At that time, Bill Dudley was the head of the Markets Group, and the SOMA manager. SOMA is the System Open Market Account, which is the Fed's portfolio of assets that were acquired through open market operations historically. It's kind of a policy tool in its own right.

My role evolved during the crisis. I started out in 2007 as the head of the discount window in New York. I also had responsibility for the middle office for the SOMA portfolio and for SOMA accounting. In that capacity, I was very involved in the implementation of the Term Auction Facility (TAF) in the fall of 2007, and then in the implementation of a number of emergency lending facilities as Fed policymakers began to invoke emergency authority under Section 13(3) of the Federal Reserve Act during 2008.

I contributed to the Term Securities Lending Facility (TSLF). I was part of the team that created the Primary Dealer Credit Facility (PDCF) on a weekend in March 2008. And I was involved in pretty much every other emergency lending facility after that because of course, all of those lender of last resort programs use the emergency lending authority I just mentioned, which is typically operationalized via the discount window.

The Fed is a bit different from many central banks around the world in that there is a very clear statutory delineation between monetary policy implementation and lending policy. The Federal Open Market Committee (FOMC) governs monetary policy and the Board of Governors in Washington oversees lender of last resort policy.

YPFS: To clarify that delineation: the FOMC runs the monetary - and who runs liquidity?

McLaughlin: The FOMC governs monetary policy implementation and instructs the New York Fed, which then implements the FOMC's decisions. Then on the liquidity side, the Board of Governors -- not the FOMC -- can invoke the 13(3) emergency lending authority when they determine that conditions in markets are unusual and exigent. This is also now subject to approval by the Treasury Secretary, as a result of the Dodd Frank Act of 2010. The Board can direct one or more Reserve Bank(s) to implement emergency lending programs. New York was initially the focus of those directives, though Boston got involved later. As in the current crisis, where Boston is currently operating two of the 13(3) facilities that the Federal Reserve Board has directed.

So the FOMC and then the Board are the two decision making bodies, and then the Reserve Banks implement those policy decisions. But all of the Fed's monetary policy implementation operations are run out of the Markets Group at the New York Fed. I've been involved with both monetary policy implementation and lender of last resort activities at different points in my career.

In April 2008, we saw the need to have more linkages between the folks that were analyzing money markets and conducting our temporary open market operations, and both from an operational and an analytical perspective, and the people who were managing our discount window lending operations. Given the growing connection between bank funding developments and our lender of last resort authority. And so we made a change in the Markets Group and created this division with a focus on liquidity operations. Spence Hilton and I co-headed that division, and it combined the discount window with the repo desk, which became very useful as we began to manage the primary dealer credit facility.

YPFS: **What was the reason traditionally for delineating monetary policy from liquidity policy?**

McLaughlin: It's statutory. Section 14 of the Federal Reserve Act governs monetary policy implementation (open market operations) and identifies the FOMC as the governing body for those activities. Section 10B and Section13(3) of the Act govern lending operations, and the law designates the Board of Governors as the decision-making body for that (with approval of the Treasury Secretary for 13(3) lending programs). So it all goes back to the Federal Reserve Act. But for most central banks in the world, it's all one set of authority.

I was very involved in monetary policy implementation at various points earlier in my career, and then again after that April 2008 restructuring, when I assumed management responsibility for the temporary open market operations.

My experience during the Global Financial Crisis was one of continual learning about global funding markets. I think many of my colleagues would say the same thing. One thing that I think many of us were very surprised by in August 2007 was that in addition to the widening in the LIBOR-OIS spread that was indicating a lot of pressure and borrowing in dollars, we were also seeing that same widening in the FX swap basis. I think we really hadn't... I just don't think we had caught up with the reality that so much of dollar funding activity was actually happening offshore, and that so much of the dollar credit creation, particularly in spaces like structured products, was happening through foreign banking organizations as well as through domestic institutions.

Every month it seemed like some different segment of the financial markets was coming under stress. First we saw it in bank funding. Again, I think that reflected awareness of the poor quality of some subprime assets, and uncertainty about who held that bad paper. And there was a lot of liquidity hoarding among banking organizations. I think there were a couple of aspects to this liquidity hoarding. One was that banks were fearful that they would need to reserve funding for any losses that they might take. A second was that they didn't want to be lending to others that had that exposure, and it was really hard to know who had the exposure, This liquidity hoarding began to depress interbank lending activity quite a bit in the late summer and fall of 2007, both in the domestic and the global US dollar funding markets. Then we saw the pressure in repo begin to build in February and March 2008, on concerns about the exposure of some borrowers in that market to subprime.

YPFS: That bank funding was November '07? Is it what you're saying?

McLaughlin: Actually it started in August 2007. I remember being called to former New York Fed President Geithner's office, the first or second week of August. He was having a call with Federal Reserve Board Chairman Bernanke about what to do to relieve the stressed conditions in the interbank funding markets. This is when the Board of Governors reduced the spread over the Fed Funds rate for primary credit at the discount window. And reiterated the Fed's willingness to lend. But again because of the stigma associated with the discount window, we really didn't get a lot of take up. In September, New York Fed and Board staff began to design the TAF, which was ultimately launched in December 2007.

The TAF was intended to avoid some of the stigma associated with the discount window by first of all being an auction process. So instead of lending to a specific institution at their unique request and at a penalty rate, anybody could go, participate in a competitive auction and obtain term funding at a market price. And also it was only for primary credit, meaning only sound banks could borrow. (Though there were problems with some domestic and foreign regulatory agencies' assessment of bank condition, that we found out about as the crisis progressed.) The TAF was the first big program that the Fed set up to respond to the stressed conditions in USD funding markets.

That was not technically an emergency lending facility, it was actually done under normal discount window authority. But it helped to alleviate stress, particularly because a lot of the funding pressure was really in the term markets. As you can imagine when people don't want to lend, the thing they really don't want to do is lend long term. They'd rather lend at a very short maturity. So there was particular pressure in term funding markets and the

TAF was intended to address that. It was kind of a hybrid of an open market operation and a lender of last resort loan – we were auctioning off discount window funding to banks, in much the same way as we auction triparty repo funding to primary dealers in our monetary policy operations.

And then, pressures began to emerge in other aspects of funding markets after the year end, particularly in repo. Some of the dynamics we saw in repo led us to pursue the triparty repo market reform, which I led for the Federal Reserve System after the crisis. In February and March 2008, a lot of the same risk aversion that we had seen in interbank funding markets in the fall of 2007 was beginning to show up in the repo markets. Here I'm referring to triparty repo, not bilateral repo. They're two very different things. I guess this is going to bleed into some of your questions on triparty repo market reform.

In the spring of 2008, there were two clearing banks, JPMorgan Chase and Bank of New York Mellon, that were triparty agents for virtually all of the participants in the U.S. triparty repo market. Triparty repo started out in the '80s as a kind of a small market dealers used to clean up their government securities portfolios at the end of the day. And it was actually in response to another innovation in repo that had gone bad. Which is kind of ironic, given that triparty repo ended up having its own problems that created risks to financial stability.

But I think in the 2000s, in particular, a lot of different developments happened that caused the triparty repo market to expand significantly. I can refer you to some blog posts we wrote on this that might be helpful to you in understanding the history and evolution of the triparty repo market and the factors that drove that evolution.

YPFS: **We'd love to see those. I watched your YouTube video. The difference is that it's outsourcing the collateral management in the triparty.**

McLaughlin: Exactly.

YPFS: **Did triparty become larger and more important than bilateral -- or just have a different function?**

McLaughlin: It became huge. By 2007, multiple trillions of dollars were being funded in triparty repo every day. It was much, much bigger than it started out. And also there was a lot more risky collateral being financed, than when it started.

The triparty repo market's settlement process was designed for dealer convenience. So the way that the market was operating in 2007 was that dealers would get their collateral back first thing in the morning. The repos would mature first thing in the morning, and the clearing banks would send the collateral back to the dealers and give the money the dealers had borrowed back to the investors.

And there was a 10-hour period between when those repos unwound and when repos for the next day would settle. From 8:00 AM to 6:00 PM roughly, the investors' money was not yet locked up with a dealer and the investors didn't have the collateral. But the dealer had this portfolio that it needed to finance, in its account at the clearing bank.

So the clearing banks actually took the role as lender for that intraday period. It was a weird situation, because although they were supposed to be a clearing agent, in reality, they were also the dealer's creditor for 10 hours of the day. That created a dynamic whereby, if I am the clearing bank and I have concerns about a dealer's financial health and ability to repay their repo borrowing, I don't want to provide funding in the morning and get the collateral from the dealer, unless I know that investors are going to come back and fund the collateral again that evening. Because otherwise, I'm going to be stuck funding the dealer's bad collateral.

So it really was a terrible design. Because the clearing banks were not only serving as the agent to just clear these transactions for the lender and the dealer, they were actually part of the transaction for half the day. They were not a pure agent—they were also a creditor. Those interests conflicted.

YPFS: **Before you play that out, what was it that drove triparty repo funding to the size it was in 2007, from being just a side idea?**

McLaughlin: The convenience of outsourcing the collateral management for the investors was a big driver of the growth. They're mainly money funds, so they didn't really have much collateral management capacity. Typically in a secured lending market, the person who's lending the funds would have a lot of expertise in the collateral and would be able to analyze that collateral, and would really be looking at that collateral as the way to be made whole if the dealer defaulted.

But the way that the money funds did it, and I think that there were some regulatory considerations that drove this too, they really didn't look through to the collateral. They tended to take the credit ratings at face value, and on that basis, judge the repo to be a very safe investment. It is interesting to note that a lot of the collateral the money funds accepted in repo was not a suitable investment for their investment portfolios under the money fund regulations. Had they been party to a trade on which a dealer defaulted, they would have been forced to sell any collateral they could not take onto their balance sheet under the regulatory regime.

The key thing to know about triparty repo at that time, is that no matter how long the term of the transaction, everything unwound and rewound every day. So as a money fund, with the daily unwind, every day presents me with an opportunity not to return my funds, even if I have a contract to lend for 21 days. It was just a really bad design. With this daily unwind, if there were concerns about collateral or a dealer's health, the clearing bank and investor were looking at each other out of the sides of their eyes to see, "are they going to come back and fund the trade so I can be repaid?" And this happened in February 2008 with some dealers, particularly Bear Stearns. It was becoming known that they had all this subprime collateral on their balance sheet and the clearing bank became nervous about continuing to lend.

With that daily unwind, the investor can just say, "No, I'm not going to continue this repo. Clearing bank, you can keep that collateral. I'm not going to come back and lend." In March 2008, there was a situation where the firm's clearing bank called up the New York Fed and said they weren't going to unwind the repo with Bear Stearns unless they had some assurance that they wouldn't be stuck with the collateral. If the clearing bank had not unwound that repo, it would have pushed the dealer into default and prompted a run on the market that could in turn have led to other dealer defaults and transmitted stress beyond the repo market. The Fed made a non-recourse loan to the clearing bank on the evening of March 14th, 2008 to avoid that outcome, while a backstop for the triparty repo market, PDCF, could be put in place. And that Sunday night, March 16, the Fed announced PDCF would go live on Monday, March 17.

YPFS: **I saw some emails on that. Yes.**

McLaughlin: Over that weekend, literally in 48 hours, a group of us at the New York Fed put together the Primary Dealer Credit Facility, to provide a backstop to triparty repo borrowers. This program ensured that investors would know that the dealers had a backstop source of funding through the Fed, so that the clearing banks would be willing to lend during the day and the funds would be willing to lend overnight. The existence of the backstop provided the confidence to the investors in the market and prevented a run. We stayed there all day and all night throughout the weekend to get it done in time to announce that Sunday night, March 16, before Asia trading opened.

YPFS: **So you have the emergence of this massive activity in the triparty repo market that was not optimally designed, had built-in vulnerabilities which were activated by the crisis. And then the Primary Dealer Credit Facility was an emergency response to soothe the market and the major banks. Is that right?**

McLaughlin: Not exactly. The backstop was put in place to provide confidence to repo lenders (which given the design of the settlement process included the clearing banks), to avoid a run on triparty repo that could have led to the defaults of many of the largest broker dealers and transmitted stress to a range of other financial markets beyond triparty repo.

YPFS: **What were you thinking as far as the length of this program, the credit facility, in relation to the need to reform? What would be the timetable, what was the understanding of how much this thing needed to be fixed, more fundamentally?**

McLaughlin: That was the hardest thing, because no one knew how long it was going to go. I think at various points in the Global Financial Crisis, people underestimated just how bad and how widespread the crisis could get. So, standing in March 2008, you're thinking, "Oh, this is great. This is the problem and we're solving it with PDCF." But then, of course, other problems emerged, like the GSE concerns, and the CP market stress, and AIG. And so, I just think the subprime problems reached so far, and frankly, I think risk management practices throughout markets in which subprime collateral was being financed were inadequate. People were holding complex structured products with subprime underlying them and were taking credit ratings at face value and weren't doing any kind of independent due diligence or robust risk management.

If you look at AIG Financial Products: they were not acting like an insurance company that does careful asset-liability management. They were a high risk investment shop, taking a lot of risk in the form of mismatches between assets and funding to achieve high returns. No prudential regulator was looking at them and regularly examining them, and taking steps to stop that behavior. That was the challenge. Subprime assets were being funded in many different ways, and the funding chains reached through many different markets. Even for a relatively straightforward lending program like PDCF, not only was it needed for longer than many of us expected, the Fed also had to expand the range of collateral funded pretty significantly in September 2008.

You might recall that after the Lehman weekend, the Fed actually expanded the collateral eligibility significantly. Before Lehman, PDCF was designed to take roughly the same types of collateral from primary dealers that the Fed accepted from banks at the discount window. And that all changed after Lehman's bankruptcy. Some of these large investment banks, who were very exposed to subprime, could have taken a lot of others down with them if they failed, the Fed really had to expand the capacity to fund them to avoid dealer defaults and the additional stress and damage that would have done to markets through which credit was intermediated, and by extension, the damage to our economy.

YPFS: **I saw that in a document—you were monitoring the liquidity positions of those (non-bank) giants around that time, right?**

McLaughlin: Yes. I think you had a question about this, what were the concerns in setting up PDCF? One big one was moral hazard and another one was that they weren't really regulated by a prudential regulator. So, when the Fed extended the PDCF to primary dealers in March 2008, the New York Fed actually sent supervisory teams into each of the largest primary dealers to have them on site. Because there was no visibility into the collateral being pledged, how it was being valued, and the risk it really represented.

With the discount window, it's all baked in, because you're lending to banks with a well-established supervisory program. They're subject to prudential oversight which feeds into the banks' ratings, which in turn determines the range of assets they can pledge and the haircuts on those assets. But with the primary dealers, we didn't have that. So, we had to do it on the fly ourselves, we couldn't rely on the SEC to do that. They're a market regulator, not a prudential supervisor.

YPFS: That's crisis management. You're just fashioning a solution that you think is going to work for a month, a year? I don't know. What timeframe were you thinking of with that kind of inspection of institutions?

McLaughlin: Yeah. I don't think anybody had a timeframe, because we honestly had no sense of when things were going to get better. It is not really possible to know for sure how any crisis will unfold. As things worsened, and the Board of Governors expanded the collateral eligibility for the facility, that created problems for us to manage too.

As we started to lend to the primary dealers, it took us months to develop our own internal data validation process to examine the assets that were being pledged. And we could only do it on an ex-post basis, because even when the process was up and running, repos settle in the evening, and so we wouldn't actually get the data on what collateral had been pledged to us until the next morning. The market still works this way, with settlement at night and reporting the following morning. Lenders are relying heavily on the clearing bank's own process controls and data integrity to ensure they are getting only the securities they are willing to take. We have seen that since reform was implemented, the clearing bank (now it's only BNYM) has made a lot of improvements to its controls and data quality. But you still want to do your own due diligence.

Back in 2008, we would do a daily check and validation on hundreds and hundreds and hundreds of securities. We had to pull all these data sources together to validate, and we discovered that there were securities that were being pledged by dealers who had created structured products backed by their own obligations, which presents wrong-way risk to us as the lender. So, as we learned more, we were constantly updating the collateral schedules to put more restrictions in on what the firms could pledge to us. The New York Fed operated regularly in the triparty repo market to conduct open market operations, but only against government securities collateral. We had no experience dealing with corporate debt and structured products and all these other security types that are more complex and entail greater credit risk, so we were learning on the fly and trying to adapt as we learned more about the market.

Right after Lehman's bankruptcy, PDCF was expanded further to fund high yield debt, loans, equities, even foreign denominated securities as well, as eligibility was extended to the assets held in the UK subs of the main US broker dealers. And it was just, I can't say enough how challenging it was to operationalize all of that. I remember standing in the lobby of my apartment building at midnight explaining to one of these firms, step by step, how to pledge eligible loan collateral to the Fed through their bank subsidiary. These firms were just becoming banks and didn't have experience with these things. And frankly we were learning too, as we were forced to value and haircut assets we had no prior experience with. But these actions were needed to avoid a collapse of funding markets, which would have done serious damage to the economy. It was a scary time.

YPFS: **Let's look at post-crisis reform in light of lessons learned. So, you go from this 2007/8 peak in September, and you're doing the extension. Then markets stabilize, the crisis begins to take another shape into an economic recession and a global financial spread. The US stabilizes and you're looking ahead, and you're involved in reforming this flawed market. What were the lessons learned from the crisis experience? And how did that drive your involvement in specifically the triparty repo market reform?**

McLaughlin: Based on the crisis experience, the staff at the New York Fed identified three financial stability concerns that they wanted to address. One was excessive reliance by dealers on discretionary intraday credit from the clearing banks for this 10 hour period every day. As we had seen with Bear Stearns in March 2008, the dealers and lenders just assumed that the clearing bank would always be there to provide intraday credit – they always had in the past. But in fact, the clearing bank always had the right to decline to do so. A failure to unwind the dealer would put them into immediate default on their repo with the cash lender that was to provide funding overnight.

Another was very poor credit and liquidity risk practices by investors, including the clearing banks in this market. Most triparty repo investors weren't prepared, if a dealer had defaulted, to take on that collateral and manage it. The daily unwind gave them an out. It's interesting, because in the bilateral repo market, where lenders were lending for a true term, with no daily unwind and rewind, and were looking to the collateral to make them whole if the counterparty defaulted, you actually saw increases in haircuts for asset types where lenders had concerns. You didn't see that in the triparty market, because I think the money funds' attitude was, "Well, this thing unwinds every day. If I don't like what I'm seeing, I'll just walk away. I'm not going to put myself in a position to take that collateral."

The third financial stability concern we saw was the risk of fire sales of risky assets – the idea that in a dealer default, since lenders weren't prepared to take that collateral on their balance sheets, they'd try to sell it as quickly as possible, which would create volatility and sharp price declines that would affect all holders of those assets. And these were the three things that the New York Fed highlighted in our white paper in 2009[3]. These were really the anchors, the pillars of our reform effort.

After the crisis, leaders at the NY Fed and the Board invited all of the largest firms in the triparty repo market to a meeting at the bank, in our dining room. And they said, "We're doing a reform. We need you to do this with us." And because everybody had been through that experience, there was a lot of buy-in. Everyone's attitude was, "Yes, that can't happen again, we need to get to a better place in this market." That is how we convened the industry task force on triparty repo reform.

The industry task force developed the recommendations and the design for the infrastructure to make this a more secure market. They did a really good job on that, but then it kind of started to fall apart when we were looking to them to actually implement the roadmap, because of course, there was a collective action problem. Nobody could force any other firm to do anything, and no one wanted to step up and assume costs without certainty that others were also going to do so. By using our supervisory tools, and highlighting the flaws in the market's design as a safety and soundness concern, both for the bank-affiliated broker dealers and for the clearing banks, we were able to get people to adhere to the plan that they had developed.

YPFS: **The first attempt was to create an industry voluntary adoption around the shared standards and that fell short? And then you went to the supervisory method?**

McLaughlin: Yes. When I joined the effort in January 2011, they were scheduled to implement the reform by October 2011. It quickly became clear to me that while the industry had developed a good roadmap, they weren't going to be able to implement it by themselves. Each firm could only commit their own firm – and there was no incentive for anyone to take on the costs of reform if they weren't sure other firms were going to do so.

[3] Federal Reserve Bank of New York. 2010. "New York Fed Releases White Paper onTri-Party Repurchase Agreement (Repo) Reform" May 17, 2010. https://www.newyorkfed.org/newsevents/news/banking/2010/an100517.html

Ultimately, we worked with the clearing banks in a supervisory capacity to say, "The industry task force has laid out this great plan to improve market resilience. This is a safety and soundness issue for your firm, so show us your plans for adhering to this reform." They did that. Once the clearing banks had put their plans in place, we went to the broker dealers and said, "The clearing banks have these plans to alter the settlement infrastructure to make the market more safe. Show us your plans for how you're going to adapt to the new process and practices the clearing banks are putting in place." And because many of the lenders in the market were money market mutual funds that the Fed doesn't oversee, we worked with the SEC, who communicated a very similar message to a lot of the big investors in the market, and that was super helpful in getting everybody to move forward together to make the changes needed.

We were able to address the first two financial stability risk concerns that I mentioned, eg. reducing reliance on intraday credit from the clearing banks, and improving credit and liquidity risk management practices. The thing that we weren't able to address was the risk of fire sales of collateral in the event of a dealer default. And there, I think it was really just an economic consideration. There are jurisdictions in the world, like England, where the government and the central bank have chosen to provide liquidity to support orderly liquidation of collateral in response to a dealer default, to firms that are within the regulatory perimeter. But we didn't really have the same ability to do that in the US. The firms felt it was just too expensive to self-insure against fire sales individually, and they couldn't make it happen collectively without a regulatory imperative. That was the one thing that we weren't able to address.

Fire sale risk remains a financial stability concern of the Fed's generally. But in my view, the fire sale risk associated with triparty repo funding may be lower now than it was at the height of the market's size in 2008. First of all, the triparty repo market is smaller in dollar terms now than it was in 2008. Second of all, because of a combination of the Fed's market reform and some of the bank regulatory reforms, the mismatch between the risk profile of an asset and the term for which it is funded in repo declined quite a bit. In 2008, everybody was funding very long, very risky assets overnight, essentially, because of these daily unwinds. Now with the elimination of that daily unwind, there is a true term transaction between investor and dealer. And the dealers, because of the bank regulatory reforms as well, have better incentives. The riskier the asset, the longer term the funding tends to be. I think we're in a much, much better place.

YPFS: **It sounds like outside events here were conducive to resolving some of these issues, as well as the task force plan and the reform structure you**

guys put in. What else was going on that made the primary dealers act in the way that was constructive, like you were describing?

McLaughlin: By Lehman weekend, there were only three nonbank investment banks left. Merrill Lynch had just been purchased by Bank of America that weekend, but it was still operating as Merrill. And on the evening of September 21, 2008, the Federal Reserve Board announced that Goldman Sachs and Morgan Stanley had both applied to become bank holding companies.[4] To provide an additional funding backstop to those organizations as they transitioned to a banking holding company structure, the Board authorized the New York Fed to expand PDCF funding to an even wider set of collateral for those two firms, and also to provide a liquidity backstop to Goldman, Merrill and Morgan Stanley's London-based broker dealer subsidiaries. They were the biggest players, so that definitely helped.

Also, apart from the market reform, bank regulatory reform was happening on a separate track. The bank capital and liquidity reforms went in the same direction of repo market reform, to require more excess liquidity, more loss absorption capacity, and longer-term funding of risky assets.

YPFS: You're saying a lot of it actually did work together hand-in-hand, even though it was on a separate track and not totally coordinated.

McLaughlin: I think it largely did. In retrospect, there probably could have been a bit more coordination between banking reform and market reform in that period. But I think we have learned from that, and have become much more integrated in how we approach these types of financial stability issues than we were a decade ago.

YPFS: On the large question of the causes of the crisis, there are still different answers, some unformed debate. From your New York Fed vantage point, what do you see as the main causes of the Global Financial Crisis?

McLaughlin: Speaking purely for myself, and not on behalf of anyone at the New York Fed or the Federal Reserve System – I can share some personal thoughts. It seems clear that the poor, even in some cases fraudulent, underwriting practices in the subprime sector contributed.

Another issue, which I'm not sure has been fully addressed, is this issuer-pay model for credit ratings. An AAA credit rating was meaningless by 2008. Because issuers, not investors, were paying for credit ratings, there was a lot of rating shopping. An issuer could kind of go to different agencies and get the

[4] Board of Governors of the Federal Reserve System. 2008. "Board approves, pending a statutory five-day antitrust waiting period, the applications of Goldman Sachs and Morgan Stanley to become bank holding companies". September 21, 2008. https://www.federalreserve.gov/newsevents/pressreleases/bcreg20080921a.htm

best deal, not really the best thing for investors. Investors didn't do enough of their own due diligence in many cases and relied too heavily on the credit rating. This probably is due in part to the relative complexity of structured products. I keep thinking about the Jenga scene in the movie Big Short, if you've seen that – it is actually a pretty effective explanation. I knew nothing about them before October 2007. I remember that in September 2007: 1% of the total assets pledged by banks to the NY Fed discount window were composed of AAA-rated structured products. And then in October 2007, it jumped to 12%. I was like, "What is this stuff? Why are banks pledging so much of it? Somebody explain this to me." And that's when I started learning about structured products. I think a lot of investors didn't really know what they were holding. They just looked at the credit rating, and they didn't look deeper. Looking deeper was costly and required expertise, because many of these had very complex structures and a pool of underlying assets that could change over time.

Another thing that I would point to is, foreign bank regulators, particularly some in Europe, seemed not to have been monitoring the level of credit and liquidity enhancement that their banks were providing to US issuers of structured products and the size of the put that they'd written on those assets. As I noted, in October 2007, we began to see a big increase in pledges of structured securities at the discount window at the New York Fed. Turns out that a number of the foreign bank branches in the NY area had sold a lot of credit and liquidity enhancements to structured product issuers, which provided good fee income but also presented risk if the puts in those agreements were exercised.

YPFS: Which you described before, right, that so much of the bank funding was being done offshore?

McLaughlin: Yes. The foreign branches that were in the US were upstreaming dollars to their parents, in many cases. The branches were making a lot of money in dollars, but it seems that the head office and regulators may not have appreciated the risks these branches were taking. As I noted, a lot of these credit and liquidity protection arrangements had a put provision. So if the issuer couldn't continue to issue because of a falloff in demand, then the banks would take the paper on their balance sheet, And that's what ended up happening when people started to realize the poor quality of the assets underlying these supposedly AAA-rated structures. The banks that came into possession of these assets couldn’t fund them in the market, so that's why they started flooding in to the discount window.

There was a lot of activity happening in 2007 and 2008 that just wasn't subject to prudential oversight. At that time, a lot of credit intermediation in the US was occurring through capital markets, through nonbank institutions that weren’t subject to prudential regulation.

I think many market participants didn't recognize the risks they were taking, and probably weren't doing enough due diligence. The post-mortems that were done after the GFC show that investors were in many cases relying heavily on credit ratings that were not necessarily accurate reflections of the true risk in complex structured products they were investing in. I remember - I'm sure you know about the paper- the very famous paper by Tobias Adrian, Adam Ashcraft, Hayley Boesky and Zoltan Poszar wrote on shadow banking. I remember reading that paper and seeing the shadow banking map they created, with the long, complex intermediation chains that involved entities and activities outside the U.S. banking system. It was just amazing to realize how much credit intermediation in the US had been occurring through capital market-based structures and through less-regulated nonbank institutions. I really learned a lot from that paper.

And soon after the crisis, there was some research by Nicola Cetorelli, an economist at the New York Fed, showing that some of the nonbank intermediation activity highlighted in the paper by Adrian et al that I noted a minute ago, had been absorbed into the banking system by bank holding company acquisitions, even before the crisis started. So that financial intermediation in that period may not even have been as "shadowy" as many people thought it was. I'm not sure whether that trend has continued or reversed in recent years though, I don't really follow it as closely these days.

YPFS: **Yeah. Was that referenced? I just want to track that down. You mentioned who?**

McLaughlin: Nicola Cetorelli. He might also have a Liberty Street Economics blog post on this.

YPFS: **For 2018, 2019 and even today, between bank capitalization and mortgage market scrutiny, those aren't as much an issue as they had been, are they?**

McLaughlin: As far as, what are the things that have improved as a result of those lessons learned, I think definitely, banking reforms have helped. Banking regulation has really helped. And underwriting practices have improved.

YPFS: **You said that the volume of triparty repo activity is less than it was pre-crisis. Did that financing activity go somewhere that you're not seeing it? Or is that not a concern?**

McLaughlin: It's just much tighter now in the triparty repo market. People are tighter on funding. There's a lot more discipline. In 2007, people could find a lot of triparty repo funding and they could get a lot of intraday funding from the clearing banks. They didn't realize that that intraday funding was discretionary, and that the clearing bank had the right at any point to say, "No, I'm not going to unwind your repo." That was another thing that we addressed through reform - the amount of intraday credit that clearing banks were providing fell by about 97%, within a few years of the Global Financial Crisis. Part of the solution was that supervisors required those credit lines to be extended only on a committed basis – which meant the clearing bank now had to allocate capital to those lines. That helped to internalize the risks associated with the market's reliance on clearing bank intraday credit; by raising the cost to clearing banks, they had stronger incentives to ration that credit more carefully.

YPFS: Did Dodd-Frank do something about credit ratings? I should know that. I thought so, but I don't know if ratings agencies were in the bailiwick of that massive law?

McLaughlin: I think that Dodd-Frank did increase the liability of credit rating agencies for issuing inaccurate ratings, and gave the SEC more authority to impose sanctions and bring claims against rating agencies for material misstatements and fraud. But the model is still issuer pay as far as I'm aware. Could this lead to problems again in the future? Possibly.

YPFS: This has been eye-opening and valuable for our archives here. Are there any lessons learned we've left out?

McLaughlin: We've covered a lot of them. Going big with your policy response up front is good, because it's the way to create confidence, which can help to stem further deterioration. That's definitely a lesson that many of us learned from 2007-2008. We've actually done that in the COVID period. It's a completely different crisis than what we were facing in 2008, but going big is helpful in any crisis, as the announcement of action can by itself create confidence.

I do feel like we've been more successful this time in really going out big with a policy response. As the pandemic picked up speed in early 2020, most parties across the public sector seemed to understand the nature of the shock the country was facing and the potential for damage to our economy. And in fact, usage of some of the programs that we've put in place has been lower than people anticipated. That might actually be a success measure because I think the announcement of those programs calmed markets and created confidence.

When I first joined the New York Fed, people used to talk about the three legs of the stool: banking supervision, payment systems oversight, and monetary policy implementation. The Global Financial Crisis brought home to many of us that it's a chair, not a stool. Because financial stability is at the core of all of the aspects of our mission, the Fed has a strong institutional commitment to financial stability. There's a financial stability division at the Board now, and they put out a public financial stability report. There is a financial stability element to many of the groups in the New York Bank and in the other Reserve Banks as well.

Again, this is a strictly personal opinion, and doesn't in any way represent the view of the New York Fed or the Federal Reserve System. But in my view, the fragmented regulatory system makes it tough to get a comprehensive view of market structure. All of the regulatory agencies have slightly different mandates, and seem to face constraints on sharing data with each other.

YPFS: What's the other unit, which you said, there's not enough sharing with?

McLaughlin: The Office of Financial Research (OFR) is something that really was a great idea in Dodd Frank, that really would have solved this problem. It just somehow never really got the support needed. So if there's one thing that I could look to that I think needs to be really reinvigorated, it's the OFR, because that has the potential to create the broad picture of the financial system. Dodd-Frank did also create the Financial Stability Oversight Council (FSOC) as a mechanism for better coordination across agencies on financial stability issues.

YPFS: Interesting. You spoke to the take up and the effectiveness of the Fed's many post-COVID credit programs, which presents a dilemma of assessment. The Fed has launched many programs in 2020 - you guys did go big and go fast. How do you assess them? Which of the credit programs have been most effective, and why?

McLaughlin: It's easier to assess the facilities that were aimed at improving market functioning, because there are clear market metrics of stress. You can see for the PDCF, the Commercial Paper Funding Facility (CPFF), the Corporate Credit Facilities (PMCCF and SMCCF), the Municipal Liquidity Facility (MLF), the Term Asset-Backed Loan Facility (TALF) and the Money Market Mutual Fund Liquidity Facility (MMLF) run by the Boston Fed -- those all clearly have improved conditions. Even though they haven't been used heavily, they've been successful in calming markets, by the metrics we use to monitor conditions. There have been a number of speeches by Fed officials on this point.

I think the harder one to assess is the Main Street facilities. There's a premise in your questions that the Main Street Lending Program (MSLP) has fallen short. I'm not sure I agree. President Rosengren has noted that while the program got off to a slow start, usage has since accelerated. And the program has also expanded to encompass a wider range of borrowers over time, in response to a public comment process.

The Payment Protection Program Lending Facility (PPPLF), which was put in place to support bank lending to small businesses through the Paycheck

Protection Program (PPP), has been effective also. It was never going to be funding 100% of those loans; larger banks have plenty of excess liquidity to fund these loans. But where the PPPLF has been really, really helpful is to support smaller lenders that lend to the smallest businesses, which employ a significant share of Americans and are the most vulnerable to the pandemic. Particularly the FinTech lenders, the community development financial institutions.

YPFS: **Okay. I recognize the Main Street Lending program is outside your direct working area, but there has been criticism of it for not realizing a lot of loans to small businesses. What would you say, about specifically why that criticism is off?**

McLaughlin: I don't feel I know enough about the program to comment on that.

YPFS: **To get down to the particulars on** an **earlier point, you said (that) it's easier for you to assess the market functioning programs. What do you look at to make those assessments? Is it volume or what specific metric?**

McLaughlin: It depends on the program, but for PDCF for example, you would look at triparty repo spreads. Particularly for nongovernment securities, which are the asset classes where the funding stress was particularly notable. If you look at spreads or even just levels of repo funding rates in those asset classes, before and after March, you could see before March, there was kind of a consistent level. And then you see this massive spike up in March. After the program was implemented, within weeks those spreads came down to pre-March levels.

For each program, you can look at indicators relevant to the market in which the facility is operating. Comparing 2019 levels with March 2020 and then levels after the facilities were implemented. Across the board, you see conditions having returned to near or below pre-COVID levels. There is a nice set of charts on this in a speech Daleep Singh gave in July 2020.

YPFS: **Thanks for spelling that out. Finally, we've seen reports or alarm bells indicating that the Treasury is going to pull the plug on, make the Fed shut these programs down. Is that right? How long are they going to go?**

McLaughlin: For the CARES Act programs, which include the corporate credit facilities, the Muni program, the asset backed lending program and Main Street, those were due to expire 12/31. And the Treasury Secretary's letter indicated that he felt that those needed to expire on 12/31. Treasury has statutory responsibility to approve or not approve programs and their extension under Dodd-Frank.

YPFS: **Which programs is it – which are the CARES Act ones – that will close on 12/31?**

McLaughlin: Right, the corporate credit facilities, the Muni liquidity facility, the TALF and the Main Street program. So those are all expiring on 12/31, as originally planned, due to the Treasury Secretary's view on the authority. But then in that same letter, you also probably saw several other programs are being extended. The PDCF, the MMLF, the PPPLF and the CPFF were all extended to 3/31.

YPFS: Thanks for clarifying that. And again, thanks for your time with us today. On behalf of the Yale Program on Financial Stability, we really appreciate your participation.

McLaughlin: Thank you.

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