Yale SCHOOL OF MANAGEMENT
Program on Financial Stability

Lessons Learned Oral History Project Interview

Interviewee Name and Crisis Position	William Nelson[1] Deputy Director, Monetary Affairs Division, Federal Reserve Board
Interviewer Name	Sandra Ward (contractor) Yale Program on Financial Stability
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Introduction:

The Yale Program on Financial Stability (YPFS) contacted William Nelson by email to request an interview regarding Nelson's time as Deputy Director, Division of Monetary Affairs at the Federal Reserve Board during the financial crisis of 2007-09. [2] As the nation's central bank, chief financial regulator, and lender of last resort, the Federal Reserve Board took the lead in setting monetary policy and stabilizing the financial system during the Great Financial Crisis of 2007-09.

Nelson's responsibilities at the Fed during the crisis included analysis of monetary policy and discount window policy as well as financial institution supervision and he regularly briefed the board and the Federal Open Market Committee. He developed special expertise in designing liquidity facilities and was a member of the Large Institution Supervision Coordinating Committee (LISCC) and the steering committee of the Comprehensive Liquidity Analysis and Review (CLAR). He has chaired and participated in several liquidity regulation working groups at the Bank of International Settlements, where he was a visitor in 2007-08.

Joining the Fed in 1993 as an economist in the banking section of Monetary Affairs, Nelson in 2004 was named to lead the new Monetary and Financial Stability section of Monetary Affairs, an internal working group established years ahead of the crisis to address financial stability issues, outlining a host of possible worst-case scenarios and ways and tools to respond to them.

Nelson's current role is executive vice president and chief economist for the Bank Policy Institute, a successor organization to the Clearing House Organization which he joined on leaving the Federal Reserve in 2016.

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

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

Transcript

YPFS: **Talk about your role as Deputy Director for the Monetary Affairs Division of the Federal Reserve Bank.**

Nelson: I had been working since about 199.8 within Monetary Affairs. I had joined Monetary Affairs in 1993 and in 1998 I took over responsibility for the discount window, which is the way that the Federal Reserve lends directly to financial institutions, to commercial banks. I was the board person overseeing and responsible for discount window policy. That responsibility resulted in my leading the first internal group at the board to work exclusively on financial stability issues.

Initially, it was a team within a section and then ultimately it became its own section of which I was the chief. That section developed what we called the "crisis binder" outlining possible things that could go wrong and ways to respond to them. It developed measures of financial strains and databases of tools available to respond to financial stability problems and information on major financial institutions. All of this information was put on a website and made available to all the board members, and there was also a quarterly briefing of the board on financial stability, as well as a write-up on financial stability that was provided to them. That all started in the early 2000s.

YPFS: **It sounds ahead of its time.**

Nelson: Many European central banks had already developed central bank financial stability groups. One of the first things that I did was to study what others were doing. This group was then, in some sense, superseded by something called the umbrella group for financial stability, which brought in folks including me, but also others from other divisions. That was initially chaired by Bill English, who was at the time an associate director or a deputy director of monetary affairs and later would become director. The financial stability office later became a full-fledged division after the crisis and was overseen by Nellie Liang.

The different iterations of the Financial Stability Division drew on the work of the predecessors, but each had slightly different organizational structures.

YPFS: **Did much have to be reinvented?**

Nelson: There was some reinventing, and some borrowing. When we started the team, I adopted the philosophy that we weren't going to be able to predict crises, but we could try to do our best to measure the conditions that made them more likely. That philosophy continued. Of course, a lot of the work is the same in terms of measuring strains and stresses on the financial system. But Nellie's mandate is a much vaster undertaking, drawing on people from across the Federal Reserve System.

YPFS: **What came next on your career path?**

Nelson: From that perch, I did a so-called "visit" at the Bank for International Settlements, the BIS, for a year and a half starting in the beginning of 2007. When I went there, it was initially to be in their research group and consider monetary policy. When I'd been there for about eight months, the financial crisis began. My knowledge of the Federal Reserve's thinking about financial crises, and particularly its tools for responding, including the discount window, were in demand. I shifted the work that I was doing more towards the direct involvement in thinking about central bank responses to financial crises.

I was at the BIS through July and part of August of 2008, and already it was the worst financial crisis since the Great Depression even before the Lehman failure. From where I was sitting it felt like I was oversleeping my event at the Olympics. As it turned out, having returned to the Federal Reserve at the end of August, there was plenty of financial crisis left to go around.

YPFS: **You probably couldn't imagine how bad it was really going to get.**

Nelson: No, it was one thing after another. It kept getting worse and worse. August 2007 was horrible and then March 2008.

YPFS: **August 2007 was when BNP Paribas suspended its funds?**

Nelson: Yes. Then there was a very big increase in discount window lending necessary. The Fed ultimately, later in 2007, opened up the swap lines and the TAF (Term Auction Facility). There were continued and cascading and escalating liquidity strains in the financial system. I explain the whole financial crisis as similar to a traditional bank run, but it was a bank run in the shadow banking system. Up to that period of time, the traditional function of banking -taking deposits and making illiquid loans- had moved to some extent into a chain of intermediation in the shadow banking system where it was the prime money funds taking in the deposits, and the mortgage brokers making the subprime mortgages at the other end. They were connected by tranched securities, asset-backed securities backing commercial paper, that were purchased ultimately by the money funds.

The Fed's role in responding to the crisis to some extent, and the part that I was particularly heavily involved in, was finding a way to get lender-of-last-resort support to each of the different parts of the shadow banking system. After Lehman happened, I got involved in a whole bunch of things very quickly. Even before Lehman, I started to get involved in the very beginnings of the design of what would become the stress tests, but then was pulled out of that because of the need to focus on liquidity issues. After Lehman, I was involved in the designing of the AMLF (Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility), which is one of the liquidity facilities that loaned funds to prime money funds. It didn't directly lend funds to prime money funds. It loaned funds to banks so that the banks could buy asset-backed commercial paper from the money funds in order to get liquidity to money funds to meet the massive outflows.

YPFS: As I recall, you have an interesting personal story about Lehman weekend.

Nelson: That's right. I'd been abroad for a while and some of my friends had arranged to fly from London and San Francisco and Long Island and meet in Baltimore, where a fourth friend had a house on a river. That Friday I had to call them and say, 'I'm sorry, I can't come.' They were shocked and disappointed, but the friends that were in the financial industry understood completely. They said, 'This is something Bill can't miss. He has to be there.' It still makes a good story. We're still in touch almost every day.

YPFS: What about your role in the AIG bailout?

Nelson: One of the events I was quickly brought into was the decision on whether to make the AIG loan. Several of us, including Bill English and Mike Gibson, another division director of supervision and regulation, worked on a memo to the board on whether or not the board should make the loan to AIG. Initially, we wrote the memo, and it had a section at the end that said, "We don't think that you should" make the loan. There were outside offers being made, and there was a sense that AIG wasn't taking those offers as seriously as they should have been, in part because they were hoping to be able to get a loan from the Fed and not have to take a tough deal. That part of the memo didn't make it to the board. In fact, the memo itself never made it to the board.

YPFS: How did that happen?

Nelson: It was reviewed by senior people who looked at it and said, 'Well, no. This is uncomfortable.' There were other people in the system, particularly in New York, who said: "That's insane. We have to make this loan or the financial system's going to implode. It's already imploding over Lehman." That could very well have been the right view. There's a certain naivete about being in D.C. at times, but nevertheless. This later came out in the aftermath of the crisis in the congressional subpoenas and other documentation at the Fed. The multiple drafts of this memo came to light and had to be discussed and is all public now. Later on, I remember Ben Bernanke responding to something I told him by saying, 'Well, I guess I'd better take you seriously, because I got in trouble last time I didn't.'

YPFS: So, there was great debate over AIG? It wasn't cut and dried?

Nelson: No, but it all happened very quickly. At that time, there was the sense we can't hold anything back. The AMLF, that first post-Lehman facility, took all of the risk as the one purchasing those not very risky short-term asset-backed commercial paper loans. But it had to in order to get the banks to buy it and get money for the money fund.

YPFS: And that required the 13(3) authorization?

Nelson: It did. It's interesting. I worked on the discount window from 1998 through 2007. The 13(3) hadn't been used since the Great Depression. 13(3) is what gives the Fed the authority to lend to non-banks, to something that isn't a bank. But almost all of the time up until then, the Fed was able to do what it needed to do as lender of last resort, and to calm problems by using its regular discount window lending authority to the banks. I had assured everyone it would never use 13(3), because it hadn't for 70 years. There was quite a bit of concern about the moral hazard associated with lending to a new set of institutions that weren't necessarily supervised appropriately.

And so, it was with complete confidence I assured everyone the Fed wouldn't use 13(3). Not only did the Fed use it several times during the crisis, when it did, it did so with great misgivings and awareness of the implications of what it was doing. This past March (2020), when turmoil hit and the Fed immediately reopened all the facilities that had been built in the great financial crisis, it seemed like a bell that can't be unsung. Fed Chairman Jay Powell has frequently addressed this issue and has said, 'These are emergency authorities and when we're done we're going to put them away,' but I do feel at this point these sorts of actions in support of financial markets and in support of non-bank financial institutions are going to be expected and standard now. It's a different world and it may be appropriate.

YPFS: Do you think it's a good development, a necessary development?

Nelson: I think it's a necessary development, but I think it needs to be implemented more comprehensively. The U.S. financial system has long stopped being a bank-centric financial system, where most credit is intermediated in the financial markets, not in banks. It makes sense that the central bank be able to provide emergency liquidity to financial markets and to the institutions like broker-dealers that are financial market-facing. But along with that liquidity support, there should be sufficiently stringent liquidity and capital requirements and supervision.

That is true for the broker dealers now, because almost all of the major ones are subsidiaries of banks, and bank-holding companies are subject to basically the same rules as banks now. But as we learned again in March, we're still very exposed to the shadow bank system. It's not at all clear there's sufficient care and oversight being applied to the liquidity and capital requirements of these institutions.

YPFS: **It is kind of amazing after all that's happened that the non-banks represent a big, yawning gap.**

Nelson: It was especially surprising to have problems with prime money funds once again. It wasn't a huge part of the turmoil in March but there were definitely periods of time when once again it seemed as if there were going to be problems with prime money funds, exactly the institutions that were the accelerants of Lehman's cascading problems.

When I returned from the BIS as the financial crisis was unfolding, I got into the business of designing liquidity facilities. After the AMLF there was the CPFF (Commercial Paper Funding Facility): The Fed lent to the facility, and that facility purchased the commercial paper.

The Maiden Lane facility set up for Bear Stearns was the first facility structured as a special purpose vehicle, but the CPFF was the first broad-based facility structured with a special purpose vehicle, the form that was used for all of the facilities in 2020. It's a pretty flexible form. You form a special purpose vehicle. The Treasury injects capital. The Fed lends to it, and then the SPV does whatever you want it to do. It's interesting, when the CPFF was being designed, the initial idea was that it would be capitalized by TARP (Troubled Asset Relief Program) funds. At the last minute, the Treasury decided it wasn't going to provide the funds, so we were scrambling to do something for the commercial paper market and ended up finding a way to get to do the CPFF without the TARP funds, through a combination of fees paid into the SPV by the participants that provided some form of capital, as well as the idea that the CP was being endorsed.

I can't quite recreate the legal argument, but it's a critical one because ultimately the lawyers that I know from the Fed back then drew a sharp distinction between the ability to create an SPV that purchases assets that can be characterized as a note, since the Fed's authority strictly speaking is to discount a note, and then also equity. Because equity, there's no way you're going to describe that as a note, and so if market participants now are holding out hope that the Fed will ultimately start purchasing equity to support the stock market, which certainly appears richly valued right now, it doesn't seem like those hopes are going to be realized. I'm not sure that that is the general expectation, but it could become critical.

YPFS: **Wasn't the Fed buying ETFs? Can't that be considered equity?**

Nelson: The ETFs are backed by notes, by bonds, and so I think it's possible that they did the gymnastics necessary to justify the action. There was something very similar in the CPFF and in the AMLF, in particular, in that there was a preference for asset-backed commercial paper over non-asset backed commercial paper. That was partly because the Fed could see through to the collateral backing the paper itself and it felt more like it was making a collateralized loan.

YPFS: **When you developed some of these facilities, were you drawing on models that existed in the private sector? Special purpose vehicles are all the rage now but were they as familiar then?**

Nelson: I want to be 100% clear that these were designed by teams of people. It was only after January 1, 2009, that I was overseeing all these operations. I was a relatively modest contributor. The AMLF was pretty much traditional discount window lending; it was the Federal Reserve banks making loans to financial institutions, many of which were banks, but others weren't, so it needed 13(3) authority. It was unique in that the Fed was taking all of the risk, not leaving risk with the financial institutions, but the form was pretty old school.

That wasn't true in this latest crisis when they basically recreated the AMLF with the MMLF (Money Market Mutual Fund Liquidity Facility). SPVs were a common financial structure for doing things. I'm sure that the people that came up with the precise legal form were drawing on that. But as something that the central bank was financing, it was unique. SPVs were used in the loans to support JPMorgan Chase's acquisition of Bear Stearns in March 2008, so they may have been drawing on that model, as we may have been, too.

After the CPFF, there were some other things that we worked on that never actually were used. One was a lending facility that was approved, and it was never opened. It was designed to lend to money funds directly, but once the money funds got wind of it they said, 'Oh please don't do that because people will flee from us even more if they think we're taking on leverage.' So, we didn't execute that one.

Another one was meant to provide liquidity to money funds in a way that's less risky to taxpayers and had less moral hazard associated with it than the AMLF. It was called the MMIFF but never got used. I will claim until my dying day that it never got used because there was never again a run on money funds while it was open, but there are many who disagree. It is notable that when there were runs on money funds again, the facility they opened was the AMLF variant of providing support. It's pretty straightforward and pretty robust, just riskier.

Ironically, when I look back on it, one of the projects I worked on after the crisis was with some folks trying to design a way to do what the AMLF did, but without taking on so much risk and without so much moral hazard, and that wasn't the MMIFF but was more effective. There was a great reluctance on the part of people that I worked with to even contemplate such a thing, because everybody was so frustrated with the slow pace in money fund reform at that time. They didn't want to do anything that would suggest that the problem was anything other than severe. My concern was that if we didn't do something, then if there were a problem, we'd end up having to go right back to the AMLF, which is what happened.

YPFS: Is some of your work sitting on a shelf somewhere that could be used down the road? What happens to those designs that are drawn up but not immediately used?

Nelson: It is sitting on a shelf somewhere, surely. Some of the work I did had an impact after I left, but I think there is a tendency at all institutions for everybody knew who comes in to reinvent themselves and the processes. I'm a big believer in trying to not redo things that have already been solved, but generally that's not the case. One example of how things worked well in that way was a fun project that I was very lucky to be working on in 2000. At that time, we all believed deeply, including everybody in the marketplace, that the federal government was going to pay down the federal debt imminently. It was running surpluses, and since basically all the Federal Reserve does in normal times is buy Treasuries to create currency and create a small amount of reserve balances used to conduct monetary policy, it seemed possible.

If there weren't any Treasury securities, it had to figure out what else to buy. There was a big system-wide effort to look into that problem, and one of the options that was considered and developed was for the Fed to auction off term discount-window loans using its regular discount window authority. That was called the ACF, the Auction Credit Facility. Then, when the crisis erupted and there was great reluctance by financial institutions to use the discount window, and there was a great shortage of term funding -this was when I was at the BIS so I wasn't involved in this- they pulled the Auction Credit Facility from the shelf, and renamed it the Term Auction Facility. Occasionally things do get used.

YPFS: Thankfully, there's some institutional memory that remembers previous efforts.

Nelson: It's important. I was one of the people who for years was arguing that the Feds should go back to conducting monetary policy the way it did before the crisis, in an environment where it left reserves relatively scarce or pretty scarce. It hit the FOMC's target for the federal funds rate by managing reserves so that they supplied just the amount that was demanded at the target rate, which wasn't as hard as it sounds. That's in contrast to the approach they kind of stumbled into in the aftermath of the crisis, in the course of all of the different QE programs, where they have an oversupply of reserves and interest rates tend to be pushed down to the interest that the Fed pays on reserves.

That's called a floor system, and so I've long been a supporter of going back to the old way of doing it, the corridor system. The floor system continues, rather than the corridor system, simply because that is what everybody has become accustomed to.

YPFS: What's the danger in that?

Nelson: There are real risks to the Federal Reserve System's independence, and also some other concerns including operating with the floor system. For one thing, when you're operating with a corridor system you can't oversupply. You can't increase your balance sheet beyond the amount needed to create that currency in the scarce reserves, or interest rates will drop to zero.

So in the occasional instance in which Congress might have desired the Fed to purchase this asset or that asset Fed officials could always say, 'We really wish we could help, but if we did we would lose control of monetary policy.' That's no longer true. There isn't really a limit on the size of the Federal Reserve's balance sheet, and you suddenly hear a lot more talk of the solution to every problem being the Federal Reserve buying assets. I think that's a real issue.

YPFS: This qualifies as modern monetary theory?

Nelson: There's an element of that. That's at least grounded in the idea that the federal government has more capacity to borrow than you might think. I'm not an expert in modern monetary theory. I'm a little skeptical. But it extends into non-experts getting the view that if the Fed buys the asset, the liability goes away. The initial versions of the Green New Deal had a financing plank. The financing plank was, 'This doesn't need to be financed. The Federal Reserve can simply go out there and buy these assets. They can print money.' And that's the risk.

YPFS: When you're in the middle of a crisis like this, are you excited? Is it thrilling, or is it the scariest moment of your life?

Nelson: It's completely thrilling. You're motivated in part by an awareness of the incredible harm that's being done to the people in the country. I think like a lot of people -I was trained at Yale by Jim Tobin and Bill Brainard and Tobin's perspective, which is a lot like Janet Yellen's, was that inflation's something to be worried about, but unemployment is the real harmful problem and don't lose sight of that. That's the response of monetarists. That was certainly my philosophy, and the philosophy of generally the Fed, is that the motivator is to try to limit the harm to people. There was also an excitement of being on a team that's working hard, working together, working very, very long hours for relatively low pay.

It was certainly exciting, and to this day I'm close to and devoted to the people that I worked with and who worked on my team. These were team efforts, and we all developed a battlefield mentality and bonded and it was very thrilling.

When I oversaw the liquidity programs, the facility that was the last one up and ended up being very complicated was the TALF, which lent money basically to hedge funds with some downside protection to get the hedge funds to buy asset-backed securities, that were in turn funding student loans and auto loans and credit card loans and other things like that.

The goal was to give credit to the real economy, but you had to do it by making attractive financing available to what generally weren't normally institutions that bought these things. But that facility took a while to set up. It was brand new. I'd gone with Ben Bernanke and a few others to the Treasury for a big announcement by the Treasury of what they were going to do next. One of the planks was to expand the not-yet-open TALF from $200 billion to one trillion dollars in capacity. As we were riding back Ben said, 'Well, when's this thing going to be ready?' I said, 'It could be several weeks or a month" or something like that. He said, 'Bill, this is currently the only thing that we have going.' That was quite a motivator. We suddenly learned there were 24 hours in a day, actually.

One of the things that I remember very fondly was during the crisis, Brian Madigan, the Director of the Division of Monetary Affairs at the time, and I would both tend to arrive at work very early, and we would often end up in his office at about 6:30 a.m. talking about what was going on and what we were seeing. I learned a lot during those conversations. We were both very concerned that the relationship between the Fed and the Treasury appeared to be changing. Prior to that time, the two agencies had a very hands-off, distant relationship that involved an occasional formal lunch in their mutual cafeterias. But over the course of the crisis, they were working together all the time.

That was partly because Treasury Secretary Tim Geithner had been the president of the New York Fed, and everybody remained very close when he moved to Treasury. Also, we were working on joint projects and I was worried about that, and he was worried about that. Indeed, you see it even more now whereby Congressional design, the Cares Act and in changes to 13(3) authorization, you have to have very close collaboration between the Treasury and the Fed. That's not necessarily a good thing.

YPFS: **Why is that? What are the risks?**

Nelson: It's a direct risk to central bank independence, even if it's friendly risk. There's a lot of evidence that countries with independent central banks have superior economic outcomes. The Fed is very independent from the federal government. If there's a regular interaction between Treasury and the Fed, and the Secretary of Treasury used to be on the FOMC, that works in the wrong direction.

YPFS: The Federal Reserve chairman is appointed by the president. Doesn't that alone put independence at risk?

Nelson: It didn't feel like a concern at the time. It's risen in prominence lately because of the current president's willingness to vocally criticize the Fed chair. I'm not sure whether that has much influence. The leadership of the Fed seems very, very different than most political appointees, even though they are. They also have very long terms. It seems quite separate. That may be changing as there seems to be more politics in the appointment process.

YPFS: Lately, there seems to be more concern that the Fed isn't structured to address what's now perceived to be inequality created by Fed actions, stimulating an economy that seems to be benefiting only a wealthy few. Did you have discussions on whether the Fed can do anything to create more equality, or is it even their role?

Nelson: It comes up a lot. I was just on a podcast recently and the person I was speaking with was very interested in talking about that subject. Even when I was at the Fed, there was a lot of concern expressed by retirees that the low interest rates used to stimulate the economy were hurting their pension income. The argument we made in response, which I think is the right one, is the way the Fed stimulates the economy is by lowering interest rates, and that also reduces unemployment. So, the unemployed or underemployed benefit from low rates. If you have any stocks, you benefit. If you have a house, you benefit.

Now the discussion is more about disparities in employment across races, as well as wealth. So, taking the two in turn, the Fed has only one dial it can turn, and it can stimulate the economy and try to get the overall level of unemployment down. They don't have separate dials to push down the unemployment rate of whites, and the unemployment rate of blacks. It can just generally stimulate the economy.

There has been increasing evidence that there isn't a neat distinction between aggregate demand and aggregate supply. Rather if you run the economy relatively hot, then you actually can increase the capacity of the economy to produce more, because it draws people into the labor force. Aggregate demand can, in some sense, create its own aggregate supply. Certainly, under Greenspan and also under Bernanke, Yellen and now Powell, the Fed has had the experience that the unemployment rate was able to go a lot lower than anybody had thought it would, without generating inflation.

That was finally, just before COVID, showing signs of really having some beneficial impacts on minority communities in terms of getting wages up and finally beginning to reduce the unemployment experiences in those communities. Those lessons, those conclusions, are now very much alive at the Fed. You see them in the change in the framework that was just articulated, about having an inclusive approach to employment and being asymmetrical in your view on employment. Rather than being concerned about departures from the natural rate, they've changed the formulation to basically say, 'We'd like to get the unemployment rate as low as possible, subject to achieving our inflation mandate.' I think that's an improvement. There's a greater sensitivity to these issues working within the bounds of the tools that they have.

An issue I would probably push back on quite a bit more is talk about the actions of the Federal Reserve contributing to wealth disparity, because low interest rates tend to push up stock market and house prices, to some extent. Since those assets are held disproportionately by the wealthy, they tend to benefit. Coupled with that dynamic is the fact people don't earn interest on their savings. What the Fed is trying to do is to try to reduce unemployment by keeping interest rates low and so there could conceivably be better relative performance in terms of wealth by stimulating the economy but at the expense of everybody being worse off by having more unemployment. The statistics that are used often are misleading or miss the point, in that the counterpoint of the Fed keeping interest rates low is the Fed keeping interest rates high. In that case, the stock market would be worse, so you wouldn't have so much wealth disparity but that's because the whole economy would be worse, and particularly the unemployment rate would be higher.

YPFS: **We've touched on this topic lightly, but while you were going through the crisis and using these nontraditional tools to stave off the recession and stabilize the financial system, did you think that you were going down a path that it would be hard to return from, this notion of the new normal? Could you get back to normal? Have we really ever gotten back to normal?**

Nelson: There was absolutely the expectation that we would be moving back to normal. One of the projects that I worked on was developing the first set of normalization principles that the FOMC announced, in terms of how it was going to get back to normal. Those are generally announced as a way to convince reluctant FOMC participants to actually vote for more stimulus by saying, 'Look, there's a plan to unwind this.' The initial announcement involved sales of securities to get the balance sheet back down. Then especially after QE3, the flow-based asset purchase program went on and on and on. It became ultimately clear that the Fed reneged on those principles.

It was very Groucho Marx-esque: 'If you don't like these principles, I've got others.' They switched to different principles that involved not selling the assets but letting them gradually decline. Of course, when we got to September of last year, when they were letting them gradually decline and they decided that was causing trouble they didn't even do that.

YPFS: **That was the dislocation in the repo market?**

Nelson: Yes. It was a boiling of a frog kind of thing, where one thing after another ultimately led to the Fed going from first thinking it was going to normalize, to ultimately becoming comfortable with its new approach. With respect to interest rates, the problem was less endogenous. The economy didn't ever really take off and inflation remained low so there was continued concern about deflation and deflation expectations becoming a bit unhinged.

At the end of 2009, the economy was picking up. It sure looked like everything was getting better. Rates were going to go up, but then there were false mud patches that we kept getting caught in. It ended up being appropriate to keep interest rates at zero for much longer than anybody had expected, and even now looking back, it's not clear that the decision to go up from zero was the right thing, since inflation still remained low. There wasn't an expectation that things had changed. There was an expectation that things would return to the way they were, but then that gradually eroded over the subsequent decade.

YPFS: **When you compare this current crisis to 2007-09, what stands out?**

Nelson: What's very importantly different about the two is that the 2007 to '09 crisis was a crisis that began within the financial system, with concerns about the integrity of the financial system and the condition of banks, and the quality of all of these collateralized assets, these structured products that people were holding. That led to insolvency and losses at those institutions, and illiquidity at those institutions, and that emanated out into the financial system, out into the real economy. That also meant that the intervention by the central bank was a natural one. Solving a liquidity problem is what a central bank is designed to do, because a central bank can create liquidity. It generally involves buying low and selling high, so you make money. You're buying things that are suffering from a liquidity discount, and through your actions making them more liquid so their price tends to appreciate when the interest rate falls. There's an added buffer of safety that happens from what you're doing, because you're making capital gains.

The current crisis is quite different. I mean, there were a few weeks of turmoil and illiquidity, but fundamentally this has been a very, very bad hit to the macroeconomy. There's really only so much that can be done through the Fed's lending and liquidity interventions to address those problems, because there’s not a liquidity problem. That's why, I think, the usage of all the facilities they've opened up has been so low. If you want to solve this problem, you basically have to take on risk or you have to inject funds through fiscal policy. Neither of those things are things that the Fed is particularly well-suited to do and that’s why the two crises are quite different.

You know, about half of what I did at the Fed towards the end focused on supervisory and regulatory policy. Are those things you want to talk about, or do you want to stick with the monetary policy side?

YPFS: Absolutely. Tell us about the supervisory and regulatory side.

Nelson: After the crisis, it was concluded there had been a big supervisory failure and there was a desire to redesign how supervision was done within the Federal Reserve System. In particular, there was a group of about 10 including myself formed to oversee the supervision of the largest institutions, the LISCC (The Large Institution Supervision Coordinating Committee).

There were a lot of horizontal reviews set up in addition to the horizontal stress tests. They were set up in part to move the power associated with supervision back to the board and away from the banks, and to make sure that there was uniformity in how things were done. In some sense, managing a financial institution's liquidity is sort of the mirror image of managing a central bank's lender of last resort operations. The lender of last resort steps in and provides liquidity in the event that the financial institution's resources are insufficient, and then there's a balancing act. How much do you want of one, and how much do you want of the other? And part of the post-crisis reforms was including a couple of new liquidity requirements on banks. There's always been liquidity expectations placed on banks by supervisors, but these were more formal requirements. When the first versions of those came out, I and a number of other economists expressed concern about how they were designed and their implications for the financial system and for financial stability.

Somehow that note made it back to Basel and to the Committee on the Global Financial System, which is the central bank financial stability group equivalent in Europe. They asked me to come and lead a workshop, and that workshop became a working group, and we wrote a report on the financial stability aspects of this. I ended up becoming very deeply involved in the design of the liquidity requirement components of the international bank regulatory standards and led probably 10 different groups there. I spent a lot of time there. That also tapped into my responsibilities here in the United

States, where in addition to being on the LISCC, I was on the steering committee of the CLAR (Comprehensive Liquidity Assessment and Review).

It's always fun to do new things, very interesting things, and it opened up a whole new, exciting line of work for me. About a third of my time was being spent on these supervisory and liquidity issues, and then the other two-thirds were on monetary policy or classic discount window, lender of last resort stuff. I developed a particular expertise and interest in the intersection of those two areas. The question is to what extent do you ask financial institutions to self-insure against liquidity problems, and to what extent do you want them, expect them and hope that they will make use of the central bank when they have liquidity problems?

That's an area of great contention, and an area I tended to work a lot in. It remains true today. It was because of that supervisory and regulatory experience that about five years ago I came over to be the chief economist for the organization that became the Bank Policy Institute, which is where I am now, a research-focused institution owned by the largest banks, with the objective of improving and supporting efficient and effective regulation.

YPFS: **A trade group.**

Nelson: It's a trade group, but it's a very research-focused one.

YPFS: **Is it your view that because of the 2007-09 crisis, requirements imposed on banks went too far.**

Nelson: Yes. Some of them they didn't go far enough, but there were certainly areas where it's my view, and it was my view with the Fed, that things were not being designed correctly. Most economists are very skeptical of leverage ratios, which are very simple capital ratios that don't wait for risk, and so those have very unattractive properties in terms of punishing banks who are very low-risk banks. That ends up discouraging banks from engaging in activities having to do with capital-market intermediation. It's led to reduced liquidity in those markets, and so that would be an area where I think regulation went too far or went wrong.

YPFS: **Is it that sort of regulation that gave rise to the shadow banking system? Is it a reason why there's so much growth outside of traditional banking?**

Nelson: Certainly. When you over-regulate banks or you unwisely regulate banks, instituting leverage ratios for instance, you create incentives for the intermediation to happen outside of the banking system. The way I've always thought about it is, people are willing to accept a low yield on investments they think of as being basically deposit-like or cash-like, because it's very convenient to have something that you can think of as cash and use. If you can link up liabilities that have that form, with assets that are actually risky or illiquid or longer term, you basically can make a lot of money.

That kind of credit intermediation what banks are designed to do, take deposits which can be demanded at any time and invest in loans, which are very illiquid. You have deposit insurance that they pay fees for, things like lender of last resort and regulation to control that transformation from flighty liabilities into illiquid things. Controlling liquidity requirements are a critical way that risk is managed and limited, but to some extent needs to be there because that's what a bank does, and banks add value.

When you make that process more costly by requiring banks to hold more capital against it for things that are in many or most cases completely appropriate, that just means it presents an opportunity for somebody who isn't subject to those same restrictions, to do it and make more money at it, and then business moves in that direction. I think the solution is some combination of making sure that your regulations for banks are all as well-designed as possible, and making sure that the range and the scope of regulation extends into all the parts of the financial system where that kind of transformation takes place.

YPFS: Is there a move towards that?

Nelson: Absolutely. Coming out of the 2007-09 crisis, there was a big focus on money funds. Going into the crisis, broker dealers who were really only overseen by the SEC (Securities and Exchange Commission) were very lightly regulated. But since then the broker-dealers ended up becoming bank-holding companies and that resulted in a much more stringent supervisory regime moving into place over them. At money funds, there was a sense among many of us that the reforms were slow, begrudging and only sort of half completed. But there is a lot of talk underway and momentum underway within the financial regulatory community now, and at the Financial Stability Board and at the Fed, about revisiting the shadow banking system and looking again hard at the regulations there. Not just money funds, but probably mutual funds and hedge funds, too.

YPFS: And the momentum has come from this latest episode?

Nelson: That's right.

YPFS: How would you rate the response to this latest crisis? Did all the work that you did in 2007-09 pay off?

Nelson: It's been extraordinary. The work has paid off in that there were a lot of models for the response that the Fed was able to use immediately. I do worry that it is now a given that the Fed will use its 13(3) authorities whenever there's a crisis, but this is an historic crisis and potentially a catastrophic one.

It's fantastic that it did not really become a financial crisis. We're not out of the woods yet. There are going to be significant losses, particularly if it looks like the fiscal support isn't continued, and probably household and business losses.

Let's see how it goes, but so far it's not been a financial crisis and that's largely due to the quick and powerful action of the Federal Reserve System, and I think they deserve tremendous credit. I know that they've put in a tremendous amount of work. I'd also note though that all of the work that was put into the post-crisis regulatory framework, which contributed to the extraordinarily strong shape of the banking system and much of the financial system, meant that instead of being part of the problem, instead of being the arsonists, the banks were the first responders. The initial huge influx of credit supporting the economy came from the banking system, and that was possible in part because banks are still better risk managers and because of the more stringent and generally well-designed post-crisis regulatory supervisory regime.

YPFS: **Good point. Thanks so much, Bill.**

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