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YPFS Lessons Learned Oral History Project: An Interview with William Dudley

William Dudley

Sandra Ward

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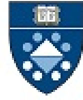

Yale SCHOOL OF MANAGEMENT
Program on Financial Stability

Lessons Learned Oral History Project Interview

Interviewee Name and Crisis Position	William "Bill" Dudley[1] Exec. Vice President, Markets Group, Federal Reserve Bank of NY; Vice Chairman, Federal Open Market Committee, Federal Reserve Board of Governors
Interviewer Name	Sandra Ward (Contractor) Yale Program on Financial Stability
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Introduction:

The Yale Program on Financial Stability (YPFS) contacted William "Bill" Dudley to request an interview regarding Dudley's time as Executive Vice President, Markets Group at the Federal Reserve Bank of New York (2007-09), President of the New York Fed and vice chairman of the Federal Open Market Committee from 2009 to 2018.[2] In January 2009, Dudley was named the 10th president of the New York Fed, succeeding Timothy Geithner.

During his time in the markets group, Dudley played a critical role in designing and implementing many of the emergency lending facilities and monetary policy measures undertaken by the Federal Reserve to stabilize the global financial system.

Following the crisis, Dudley helped normalize the Fed's monetary policy and balance sheet and pushed for improvements in the bank's analytical capabilities and supervisory culture. He is credited, too, for bringing a deep practical knowledge of the workings of capital markets to the Fed. Prior to joining the Fed, Dudley worked at Goldman Sachs for twenty years and held the position of chief U.S. economist for more than a decade.

Dudley retired from the New York Fed in mid-2018. In 2019, he joined the Griswold Center for Economic Policy Studies at Princeton University as a senior research scholar. He is a member of the Group of Thirty, an independent think tank comprised of leading global economists and finance professionals from the private and public sectors as well as academia, as well as the Council on Foreign Relations. From 2009 to 2018, Dudley was on the board of the Bank for International Settlements and chaired the BIS Committee on Payment Settlement Systems from 2009-12 and the Committee on the Global Financial System from 2012-18.

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

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

Transcript:

YPFS: **Could you describe the role that you had at the New York Fed?**

Dudley: I joined the Federal Reserve Bank of New York in January 2007. I became an executive vice president and the head of the Markets Group. The Markets Group is responsible, within the Federal Reserve, for the implementation of monetary policy. It's also essentially the source of market intelligence in terms of what's happening in markets and why things are happening in markets. It has a few other functions like conducting Treasury auctions and overseeing the primary dealer network. It also engages with foreign central banks and other international institutions through the Central Bank International Account Services. About $3 trillion of custody assets sit at the New York Fed and the Fed manages those accounts. That's the responsibility of the markets group. At that time, the head of the Markets Group also was the System Open Market Account Manager for the Federal Open Market Committee.

YPFS: **You left the private sector, Goldman Sachs, to join the Fed. Was that an easy move for you? Were you unhappy in the private sector?**

Dudley: No, I wasn't unhappy in the private sector. I'd been at Goldman for 20 years and was running the U.S. economic research group for 10 years. I felt it was time to do something different. Potentially, there was no new job I wanted at GS that they were going to give me. They were perfectly happy with me in my current job. I thought it was a time for a change and had decided to leave Goldman before I actually got the job at the Federal Reserve Bank in New York. I stepped down as partner at the end of 2005. I was an advisory director for 2006 and helped in the leadership transition for Goldman's U.S. economics group.

During that time, I had a number of conversations with Tim Geithner about coming over to the New York Fed. The first conversation began with him asking, "Do you want to come over and be an advisor to me?" I declined because I felt the advisory part was fine, but wondered what I would do the rest of the time. A few months later, he came back and said, "Well, how about coming over and running the Markets Group," one of the major groups within the Federal Reserve Bank of New York. As part of the Markets Group, you're also the System Open Account Manager for the Federal Open Markets Committee. You're participating in the FOMC meetings, you're briefing the FOMC on a regular basis. The job isn't just about running the Markets Group, it's also about being the SOMA manager.

YPFS: **Right on the front lines. You joined at an interesting time. Did you have any sense at that point that there were dislocations going on or misallocations of capital that would eventually lead to this big crisis?**

Dudley: We were certainly aware of the housing boom and how that was being fueled by subprime lending and pretty lax underwriting standards in subprime. We were certainly aware that the boom in housing was also fueling economic activity as people were doing mortgage refinancing and taking out home equity lines of credit (HELOCs), where they take money out of their appreciated homes, and that was supporting consumption and economic activity. We were definitely aware of some of the risks. The first briefing I gave at the FOMC was in January 2007 and I raised the issue of subprime risk.

I explained that the subprime market was under some stress and there was a risk that things could turn quite negative. It wasn't a forecast, but I suggested a constriction in credit within the subprime market could lead to a sharp downturn in lending that could then have effects on housing prices, which then could lead to more credit problems. A vicious circle could emerge. I don't think I thought that was the most likely outcome at the time, but I was definitely aware of that risk.

YPFS: **At that point, was a connection being made with collateralized products and the risks they posed?**

Dudley: There was a connection being made, but the perception was that the subprime market wasn't that big and therefore that although this would spill over, it would not spill over so powerfully that it would have huge consequences for the financial system. There was awareness that there was stress in this market, and there was awareness that the stress in this market could have negative effects on the securitization market for these assets. Whether this market was big enough to tip over the entire housing market and the U.S. economy as well as the global financial system was still very much uncertain at that point.

YPFS: **What was the first whiff there was something more serious going on?**

Dudley: In January, I was pretty nervous about what was going on in the housing market because the housing market was already starting to deflate. In the following month, February, there was quite a lot more market turbulence. It was not just in the subprime market, but also in the broader market. You could start to see the differentiation and performance of subprime mortgages based on their vintage. The most recent vintages were performing far worse than earlier vintages. We had a good look at this because there had been a new index developed, the ABX index, which showed what was happening to the different tranches of securitized

subprime assets. You could trace what was happening to the triple-B tranche versus single-A tranche, and you could do it not only by credit rating but also by vintage. You could start to see some of the strains emerging in that marketplace.

The February market turbulence passed without much incident. You can think of it as a little shudder. Most people dismissed the seriousness of it. The realization there was a serious, serious problem didn't occur until August 2007 when BNP Paribas stopped redemptions from some of their investment funds. That led to a huge upward spike in funding pressure as European banks scrambled to obtain dollar funding.

I remember the time vividly because my wife and I had built this house in West Virginia, where I am speaking from today, and that was the day we took occupancy of it. I didn't leave the house that day or the next day. I literally did not go outside because I was on the phone trying to figure out how the U.S. should respond to this upward pressure that we were seeing on the fed funds rate caused by the turmoil in the European market. At that point, we realized this was something pretty serious and probably going to have some staying power to it.

YPFS: When did you get a sense that this was escalating?

Dudley: In the fall of 2007, you saw a big increase in three-month funding rates relative to Treasury bills and the federal funds rate. That showed there were intense strains in bank funding markets. The Fed encouraged banks to go the discount window and that didn't go well at all because banks felt stigmatized by going to the window. The Fed started to develop the Term Auction Facility (TAF) as a potential way of overcoming stigma at the discount window. The Fed held off introducing the Term Auction Facility until a bit later as the situation improved somewhat, temporarily.

YPFS: Talk about your role in the TAF.

Dudley: I was deeply involved with the Term Auction Facility. We were trying to figure out how we could get banks that needed funding to come to the window in a way that it wouldn't be stigmatized. The Term Auction Facility did that in a couple of ways. One, there was a lag between the auction date and when you actually got the money so it was obvious the money wasn't needed that day. And you were participating at auction with a lot of other participants and that also removed some of the stigma of participating. Under the Term Auction Facility, the loans weren't overnight loans, they were for term. First for 28 days, and then that was extended to 84 days. The Term Auction Facility helped encourage banks to come to the discount window and obtain liquidity. One of the problems, though, throughout this entire period, through the fall of 2008, was the Fed operating framework

made it much more complicated for the Fed to provide large amounts of liquidity to the banking system.

If the Fed loaned a lot of money to the banking system, that, in turn, would add reserves to the banking system, which the Federal Reserve was going to have to turn around and drain from the banking system, otherwise the Fed would lose control of the federal funds rate. The federal funds rate was managed by making sure that just the right amount of reserves were in the banking system. Adding reserves through liquidity facilities potentially could undermine the ability to keep the funds rate at the target. So the facilities, when they were rolled out, weren't open-ended and unlimited. They were always for a finite amount of dollars at the auction. That was always a little bit of a problem because it meant the Fed could always be one step behind the curve. You also couldn't reassure people that if you needed liquidity it's absolutely going to be there. If a facility only has a finite magnitude, there's a risk it could run out.

That changed in the fall of 2008 with the passage of the TARP Legislation. That legislation allowed the Fed to pay interest on reserves. The Fed already had the authority, but the authority wasn't going to become effective for a few years. The TARP legislation moved the start date to the fall of 2008 and allowed the Fed to move to unlimited, open-ended liquidity facilities.

YPFS: **Was there a lot of debate about that? Whether it was the right course to take? Was there concern how it could it be perceived?**

Dudley: People were operating within the constraints of the Fed system. The Fed didn't have the authority to pay interest on reserves at that time. The Fed was stuck with a monetary policy implementation framework that necessitated tradeoffs between the control of short-term interest rates and the provision of liquidity. My view is that the new regime of paying interest on reserves is much better, as it doesn't create an inherent conflict between providing liquidity to the system and maintaining control of monetary policy. You can now add as many reserves to the system as you want, as we've seen over the last few months, without that having consequences for the Fed's ability to target the federal funds rate. There's not a conflict today because the funds rate is essentially zero, but you can imagine a situation where the Fed wanted to add liquidity but didn't want to lower the federal funds rate. Now there are two separate tools to manage these two actions rather than having to manage a tradeoff between the two.

YPFS: **And you were at the heart of those discussions?**

Dudley: Yes. People always ask, who invented what? Nobody knows who invented what because that's not how it works. Problems are presented, there are discussions and we look at the tools available to deal with them and suggest

ideas of how we could go about it. We look at the strengths and the weaknesses of certain approaches, and we come up with potential solutions. The final version we typically ended up with included contributions from a lot of different people.

It's not as if any particular program is the result of any particular person. The only thing about the Term Auction Facility that I could actually say I was responsible for is the name. Originally it was called something different and people were arguing about what the right name should be. I decided it was not a great use of our time and resources to spend a lot of energy arguing about the name so I cut to the chase and named it the Term Auction Facility.

YPFS: In terms of other policymaking decisions, do you have any other interesting anecdotes that you can share?

Dudley: There was a bit of a blind spot for the Fed in the sense that macroeconomics forecast models generally didn't have a big role for the financial sector. The idea that bad things could happen in the financial sector and could spill over powerfully to the real economy wasn't how macroeconomists thought about things. I felt as if I had an advantage because I had worked for 20 years at Goldman in markets and had a better sense that these two things could be linked, potentially. It was a bit of an uphill battle convincing people that this was a real risk because it wasn't how most macroeconomists thought about the macroeconomic outlook.

Through my briefings in 2007 and 2008, there were many times I talked about how the economy could go south: How the housing market could turn down, and that could put pressure on financial asset prices, and that could put pressure on financial institutions and the whole system could start to unwind. We had a positive feedback loop with subprime mortgages pushing up home prices and so we could have a negative feedback loop as all these things unwound. It would be particularly powerful if financial institutions started to break under the stress of the housing bust. The problem was it couldn't be proved ahead of time. People would say, 'Well, how do you know that?' I would say, 'I don't know, it's just seems to be real risk. At a minimum, it is a potential outcome that we should be aware of.'

There was considerable skepticism about how this could turn out very badly.

YPFS: Interesting because, in hindsight, it seems such a logical progression of what could happen.

Dudley: Part of the problem is that when you think about how people become experts, they tend to be expert in a narrow vertical. So when you think about how the Fed's research department is structured, especially at the Board of

Governors, there's a person that's responsible for thinking about wages, a person responsible for thinking about inflation, a person responsible for thinking about output. All these views are aggregated to formulate a coherent economic forecast. What that means is there's a lack of expertise in looking at how all these pieces fit together. To think about how it all fits together, you have to have enough experience in each of the pieces to be knowledgeable enough to be able to see how these things are actually interconnected.

The way people advance in their careers is by specializing. Specialists tend to defer to other specialists that are operating in adjacent spaces. There's a lack of incentive to understand the entire system and how the entire system fits together. I've taught a course at Princeton on the financial crisis and one of the things I tried to communicate to the students was to think about how all this is connected.

One of the weaknesses going into the financial crisis was people didn't understand how there's been a virtuous cycle on the way up and now there's going to be this vicious cycle on the way down. There are a lot of elements to that, including the lack of understanding about the weaknesses in the securitization markets with the allocation of subprime mortgages into triple-A and double-A CDO tranches. I don't think people fully appreciated how the performance of these tranches depended on low correlations between the underlying assets. If the correlation of the underlying assets moved up sharply, because you're moving from a housing boom to a housing bust, then the assumptions in the securitization markets would turn out to be wrong. The correlations would be much higher and the performance of the higher-rated tranches would be much worse than what people were anticipating.

YPFS: You couldn't trust the ratings of some of those assets?

Dudley: Right. The ratings were based on assumptions that turned out to be incorrect. That's the nice way of saying it, I guess.

YPFS: Were you looking overseas for any guidance?

Dudley: We knew that the foreign banks were in a vulnerable position because they had funded significant holdings of dollar-denominated assets in the interbank market. And the interbank market was under a tremendous amount of strain. Foreign banks had trouble funding their dollar book of assets, and that's one reason the Term Auction Facility was introduced: to help the foreign banks with operations in the U.S. The foreign exchange swaps were initiated to help these foreign banks fund those dollar assets rather than be forced to dump those assets into the marketplace. It took some time to get to the swaps, too, because there was some reluctance. The

European Central Bank was a little reluctant to put up their hand and say, "Hey, we want swaps." Because that meant acknowledging that there was a significant underlying funding problem. From the U.S. perspective, swaps were pretty attractive because the alternative was for the U.S. to lend directly to the foreign banks. But, swaps were much more attractive because the Fed was lending to a foreign central bank and the foreign central bank was lending to the domestic banks. The Fed potentially had exposure to the central bank rather than exposure to the individual foreign bank and it was a better arrangement for the Federal Reserve from a risk perspective.

YPFS: **And you were intimately involved in that process?**

Dudley: Yes, myself and the head of international finance at the board of governors were deeply involved in arranging the dollar swap auctions. And,of course, the Federal Open Market Committee had to make the decision whether to approve the swap lines or not.

YPFS: **The big moment in the course of the crisis was when Lehman was allowed to fail. Can you talk about that decision and your role in it, and how it transpired?**

Dudley: With Lehman, my response was, 'Uh oh, this is going to be bad. What are we going to do to make this less bad, as opposed to the decision whether to intervene and support Lehman or not.' I wasn't deeply involved in the issue of whether Lehman would be rescued or not. I was involved in trying to minimize the fallout when Lehman failed. My understanding of what happened, and I was there, so I guess I have a pretty good understanding, was essentially time ran out. There was no buyer, and the Fed didn't want to lend to a firm that it wasn't sure was solvent, and probably thought was insolvent, because what was the Fed's exit strategy? A Fed rescue won't have likely stopped the run as Lehman really wasn't viable at that point.

Things went badly that weekend. The idea was that Barclays was going to buy Lehman but only after a bunch of bad assets had been taken out of Lehman, somewhat similar in form to the JPMorgan acquisition of Bear Stearns. But the UK government didn't permit Barclays to buy Lehman and time ran out.

What Tim Geithner, Ben Bernanke and Hank Paulson have said is they didn't think that the Fed should lend to an entity where there's no clear viable end game. There was a lot of discussion about whether Lehman was solvent or not. People have made the argument Lehman still had capital and it still had collateral. I think that if it wasn't insolvent on the day before they failed, it was definitely insolvent the day after they failed. The amount of destruction of value that occurred with the bankruptcy filing was quite significant.

Look at the Lehman estate and how it was resolved. You can see how large the losses were. They were quite substantial. I think Lehman was an insolvent institution and if the Fed had lent to it, it's not clear how the Fed would have managed its way through that process.

YPFS: **How did Lehman differ from the decision on AIG? What separated the two?**

Dudley: On AIG, I wasn't very involved at all because I owned about 600 shares in AIG and I recused myself from the entire AIG process. I was involved only with AIG when its management came into the bank prior to Lehman weekend.

I can't remember the exact date, but it was right before Lehman failed, and AIG basically laid out its liquidity problem. Its liquidity problem was really, really serious, because essentially every time AIG's credit rating was downgraded, the firm had to post a lot more collateral against their outstanding obligations, collateral that they didn't have.

While the insurance companies they owned had plenty of liquidity, the regulators wouldn't allow the firm to upstream sufficient liquidity from the insurance companies to the parent company to satisfy the liquidity shortfall. They needed the liquidity at the parent company, because the obligations stemmed from AIG Financial Products Group, and the AIG Financial Products Group was attached to the parent company.

It was obvious that AIG was in great difficulty and they were going to have a liquidity crisis. Lehman's crisis accelerated all of that. As you might remember, there was an effort under way for the private sector to come in and make a loan to AIG. I think it was to be an $85 billion loan.

What happened in the rescue of AIG was the Federal Reserve stepped into the shoes of the private sector and made the loan under quite similar terms. The difference between AIG and Lehman, is that there was a pretty strong view that AIG was still solvent but had a liquidity problem. They didn't have a solvency problem because the insurance companies they owned were quite valuable. The Fed was pretty comfortable that these subsidiaries could be sold, and they were ultimately sold. With the benefit of hindsight, I don't think the Fed fully appreciated how big the liquidity hole was at AIG. That ultimately became clear at AIG's security lending operations where AIG had loaned securities, obtained cash, taken the cash, and invested in highly illiquid and fairly risky, mortgage-backed securities.

There was this whole second source of liquidity problems at AIG, independent of the counterparty issues surrounding the obligations of AIG Financial Products. The total amount of resources that went into AIG from

the Fed and the Treasury was well over $100 billion. That was bigger than what anybody at the time anticipated.

YPFS: **Wasn't there a sense that Lehman's management was being uncooperative or withholding the true extent of their problems and the company's capital base. It sounds as if AIG might have been a little bit more open about the extent of its problems. Can you speak to that?**

Dudley: That's true to some extent. AIG came to the Fed and said, 'We've got a problem.' They were proactive. To me, Lehman senior management seemed mostly in denial. I got a sense of that up close and personal because Dick Fuld was on the board of directors of the Federal Reserve Bank of New York. In my interactions with him, and other people also will say in their interactions with him, there was the sense that he felt that he'd gone through these kinds of economic downturns before and come through it and Lehman would do it again this time. He didn't seem to feel the sense of urgency that we felt. I know I felt it, because in the summer of 2008 I put up a strawman proposal about a rescue plan for Lehman before they got into difficulty. I suggested carving out a bunch of bad assets from Lehman Brothers and taking those assets onto the Fed's books in exchange for a bunch of warrants in Lehman stock so the Fed would be compensated for the risk it was taking. It was sort of a Bear Stearns-JPMorgan transaction but without someone acquiring Lehman Brothers. I remember sending this proposal to the board of governors and it went over like a lead balloon.

A lot of the problem, too, in all this, is that in a financial crisis it's hard to get ahead of the curve because there's always the hope that things might resolve on their own. You don't know what's going to happen in the future and you don't know that things are necessarily going to go badly. You can't prove that acting preemptively will necessarily put you in a better position. The person who's arguing for the preemptive action always faces a bit of an uphill battle to convince people to do that unprecedented thing that they've never done before.

YPFS: **What about the notion of having the chief executives of non-bank financial institutions sitting on the board of the Federal Reserve?**

Dudley: In my tenure, I tried to have a diverse board of directors with people from lots of different backgrounds. The board of directors by law must have bankers or bank representatives on it. There are three bank slots. Typically, those slots are filled by representatives from a small bank, medium-sized bank, and a big bank. Dick Fuld was a class B director, a class typically filled with people from commerce. The people I had on board when I served as bank president as Class B directors were people like Dave Cote of Honeywell, Terry Lundgren, the CEO of Macy's and Glenn Hutchins of Silver Lake Partners, a private equity firm. I was trying to get a broader cross

section of people from the business community for the Class B directors. For the Class C directors, I tried to achieve greater diversity as well. Emily Rafferty of the Metropolitan Museum of Art was a Class C director and was chair of the NY Fed Board for a time and she was succeeded as chair by Sarah Horowitz, the head of the Freelancers Union at that time.

YPFS: **The Federal Reserve doesn't have authority over non-banks. Isn't that an underlying problem?**

Dudley: The Fed didn't have a very good window into the true financial condition of major non-bank financial firms because they didn't have any supervisory authority over them. That's problem No.1. Problem No. 2 is the entity that did have the authority, the Securities and Exchange Commission, didn't put much emphasis on financial stability and safety and soundness. They had a very different model about what happens when a securities firm fails. When a securities firm fails it goes into bankruptcy and the customer's accounts are protected against losses. There also wasn't the sense that the failure of a large securities firm would be devastating. There are a couple of reasons for that: One, there hadn't been financial securities firms of this size before. They were a product of the growth of the capital markets and the securitization markets in the 1980s and 1990s.

Goldman Sachs and Morgan Stanley were 10 to 20 times bigger than they were in the 1970s, maybe more than that. The one sizable securities firm that failed, and it was much, much smaller than the firms that failed in 2008, was Drexel Burnham Lambert and there was little contagion to other firms from that. The world had changed, but the regulatory regime had not kept up with that change. These entities were much bigger, much more interconnected, and much more systemic than previous firms had been back in the Seventies and early Eighties. Subsequent to the financial crisis, this issue largely resolved itself because the securities firms either failed or they were acquired by banks, or they became bank holding companies, a path taken by Goldman and Morgan Stanley. All the major securities firms essentially came inside the regulatory net in the post-crisis period.

YPFS: **That's a good point. But do you think the question of authority over non-bank financial companies should be addressed by regulators to better manage future problems?**

Dudley: Yes, absolutely. When people do the postmortem for the current coronavirus pandemic and the financial consequences of that, they're going to, again, look back at the non-bank financial sector as the weak spot. We saw the weakness in terms of the Fed's need to intervene in the Treasury market and buy massive amounts of Treasuries to help hedge funds unwind very leveraged trades, where they were long cash Treasuries and short Treasury futures.

We saw it again when the Fed had to intervene to support the money market mutual fund industry. We saw it again in the Fed intervening to support the corporate bond market. It seems as if most of the financial difficulties we've seen during the current coronavirus pandemic are not in the banking sector. The banking sector seems to be considerably more robust because of higher capital requirements, higher liquidity requirements, and stress testing. The regulatory oversight of the non-bank financial sector still looks quite weak.

In principle, the Dodd-Frank Act set up the Financial Stability Oversight Council to deal with oversight of the non-bank financial sector, but the Financial Stability Oversight Council hasn't done much in this regard. The entities that were designated systemic have been de-designated. And the Financial Stability Oversight Council has done very little in terms of activity-based regulation. The only thing you can point to concretely that they've done that was somewhat helpful is they put a considerable amount of pressure on the Security and Exchange Commission to strengthen the SEC's reform of money market and mutual funds.

And the SEC responded by eliminating the fixed net asset value (NAV) for prime institutional money market funds, which basically led to the demise of the prime institutional money market funds. That was a good thing and that made the system a little bit more secure going into this crisis. But little has been done on the non-bank financial sector and that still seems like an significant vulnerability. That's important, especially for the U.S., because the non-bank financial sector in the U.S. is a much bigger proportion of the financial system than it is elsewhere.

YPFS: **And it has grown since the last crisis.**

Dudley: It's grown a lot.

YPFS: **Do you think there is more urgency to tackle this issue after this current crisis?**

Dudley: I would hope. People are talking a little bit about the moral hazard issue of what happens when the Fed intervenes and supports markets and bails out people that were in bad trades. I think the turmoil we saw in the Treasury market, in particular, is going to get looked at very, very carefully. Do you really want to have a situation in which when markets get in turmoil the Fed is basically forced to intervene and let the people who took on these very levered positions escape by intervening and essentially limiting the losses those entities have to take?

It's hard to do things in peace time that protects you in war time. The good news from the last financial crisis was that it revealed a number of vulnerabilities. Some of those vulnerabilities were fixed. One good example is the tri-party repo market. The tri-party repo system was a source of

instability during the last financial crisis because there was a concern that the clearing banks, the commercial banks that are clearing a tri-party repo trade, would be unwilling to unwind their trades in the morning and would not give the cash back to the investors because the banks had to assume the intraday risk under the old tri-party repo regime. In turn, investors were concerned they might not get their cash back in the morning and if they weren't going to get their cash back they also reconsidered whether they should continue to fund a securities firms in the tri-party repo markets. The Fed intervened in the aftermath of the financial crisis and forced the clearing banks and tri-party repo borrowers to fix the tri-party repo market by eliminating the risk that a clearing bank would be unwilling to unwind the trade. Working with market participants, the Fed also facilitated a number of other changes that have made the tri-party market a lot more robust.

But it's hard preemptively to identify potential problems and fix them before they actually manifest themselves, unfortunately. People lobby against it. A good example of a change that was discussed which is completely sensible but was never implemented in the last few years is prohibiting mutual funds from providing overnight liquidity in mutual funds that invest in illiquid assets. It makes no sense. You're creating the potential for runs against assets that are illiquid, and incenting people to dump those illiquid assets, which then increases the degree of stress in those markets.

Why not, for people that are investing in illiquid assets, refuse to give overnight liquidity and provide monthly liquidity instead? The reality is it would not disadvantage investors in those funds very much at all because if they're investing in a high-yield bond fund and need overnight liquidity they probably shouldn't be invested in the high-yield bond fund in the first place.

That's a change that would be pretty easy to implement. It wouldn't really disadvantage people. There's a coordination problem because no individual provider of high-yield bond funds wants to be the first mover and say, no, we're not going to give you overnight liquidity. What's needed is someone external to the industry to mandate a change to monthly liquidity.

YPFS: **Why is there pushback if it's quite manageable for them to operate differently?**

Dudley: They're afraid it'll make the funds less attractive at the margin. But the fact is if you put monthly liquidity in place, you're actually benefiting all the investors in the fund because you're reducing the risk in that asset class. People may not understand it's benefiting them, but it is. I'm still hoping that one of the outgrowths of this last set of problems in the financial

markets is we'll be looking again at the issue of liquidity for mutual funds and having that liquidity be tied to the illiquidity of the underlying asset class.

YPFS: **When you refer to mutual funds are you also including exchange-traded funds?**

Dudley: I wouldn't put them in the same bucket. Most ETFs actually performed quite well. They went through a very high-stress period and at times the basis between what the ETF trades at and the underlying assets to the ETF trades at can widen out. But it seems as if the arbitrage process works and the spreads tend to come back in relatively quickly. There are parts of that market, like the exchange-traded note market, I'm more concerned about. Now, it's useful to ask the question, would the ETF market have come through this so well if the Fed hadn't intervened so aggressively? The fact they are less vulnerable is good, but it doesn't tell you that they're able to withstand any kind of shock. But they were stress tested and they seemed to come through quite well.

YPFS: **To get back to the 2007-09 crisis, when you look back at it, could it have been averted, or better contained?**

Dudley: It could have definitely been better contained. Banks could have been forced to raise more capital a lot sooner. Regulators could have forced banks to stop paying dividends a lot earlier. We've seen that issue emerge again during this crisis. The banks were clearly undercapitalized relative to the risks that they were running. Banks didn't have enough liquidity because their off- balance sheet activities, the special investment vehicles (SIVs), came back on their balance sheets. Obligations that were supposedly off the banks' balance sheets but they nevertheless backstopped for reputational reasons put them under a lot of pressure. A lot of things could have been done better.

The underwriting of securitized products and subprime mortgages could have been a lot better. The amount of abuses in terms of the NINJA loans - No Income, No Job, No Assets- underscores how badly the underwriting was for subprime mortgages. Obviously, that created a lot more damage.

There were a whole host of things that could have been done to make the financial crisis much less severe. It would have taken a lot of foresight and confidence. It would also have been difficult because the Fed didn't have the authority in a lot of areas. The best example of this is when Ned Gramlich raised his hand as a member of the Fed's Board of Governors and warned of the subprime problems well before the financial crisis really took root. He didn't make much headway within the Federal Reserve to do something about it.

The subprime mortgage market only worked if home prices kept rising. By definition, at some point, home prices were going to stop rising and the subprime mortgage market was going to shut down. It was probably going to happen no matter what, but the knock-on effects of the collapse could have been mitigated.

YPFS: **Did it occur to anyone that housing prices were rising significantly at a time when incomes were not? Did anyone make that connection and question the sustainability of the housing boom?**

Dudley: A lot of people were looking at the housing boom and wondering whether it was going to be sustainable or not. There were definitely disagreements about that. At Goldman Sachs, we were quite skeptical it could persist. Within the Federal Reserve system, they were more comfortable that the vulnerability was less. Looking at the housing market, there was a lack of understanding that if the boom turned to bust, the functioning of the financial system would be imperiled. That's really where there was little understanding. Everyone understood that home prices could decline, but I don't think they understood what the consequences of that could be.

YPFS: **Walk us through what you have mentioned publicly as the lessons learned from all of this, especially the interconnectedness of the system.**

Dudley: You want to look at the entire system and how it's interrelated and how shocks in one part of the system can reverberate through to other parts of the system. Think about Lehman's failure. Lehman failed and all of a sudden there's a money-market mutual fund, The Reserve Fund that owns a lot of Lehman paper that now is no longer viable. That leads to a run on money-market mutual funds, which then contributes to a shutdown of the U.S. commercial paper market. It's how these things feed through the system and the potential for the knock-on effects to snowball of which you've got be cognizant. That's one thing.

The second thing is to focus on assumptions people broadly hold and understand that if they turn out to be false that surprise will cause problems. One assumption that was held broadly was that the ratings of these securitized assets reflected their underlying riskiness. We found out that wasn't true. There were a lot of assumptions like that that turned out just to be wrong. The assumption that the subprime market wasn't big enough to threaten financial stability turned out to be wrong. When people have strongly held assumptions and those assumptions are generating a boom and those assumptions subsequently turn out to be incorrect, you almost always are going to have a bust on the back end. And then the question is, what's that going to do to the entire system? Thinking about how the whole system fits together is absolutely critical as is understanding

what assumptions might turn out to be wrong and if they are wrong, what's likely to happen as a result.

You need to do more tabletop and scenario analysis, ask the what-ifs, and think about how things can ripple from one part of the system to another. You need to focus on whether the feedback loops are dampening or not. You need to assess the ability of the system to absorb unforeseen shocks. It takes quite a bit of imagination and it takes people out of their comfort zone, but it's an exercise that is absolutely necessary.

The other thing I think you have to do is force people to do things for the good of the entire system that they don't see as necessarily in their self-interest. A good example of that is if every commercial bank had been forced to raise more capital, each bank might have ended up having more capital than they actually needed because the financial crisis would have been much less severe. But this would have resulted in a better outcome for the financial system.

In the spring of 2009, when the Supervisory Capital Assessment Program (SCAP) was done, that was very valuable because it basically forced all the banks to hold more capital. By forcing them to hold more capital it made the system a lot safer. It reassured people about the safety of the banking system, which led to a better economic outcome. If everyone knows that banks have enough capital, the chance of a really bad financial crisis goes down. If the chance of a really bad financial crisis goes down, it turns out the banks don't actually have to hold that capital. But if they don't hold the capital, then the risk of a bad financial crisis goes up and it'll turn out they actually needed the capital. You can avert bad outcomes by having enough protection in place.

Another feature of the financial crisis was the importance of when the Fed intervened and offered open-ended liquidity facilities. It doesn't matter how much these liquidity from these facilities that is actually used, they provide a credible backstop. It encourages private investors to continue to trade in the marketplace. Backstops can be hugely important.

In the fall of 2008, there were institutions that were not willing to lend to other institutions they knew were solvent because they weren't sure if other people thought they were solvent and they were worried if other people didn't think they were solvent, they might not be able to get their money back when their investment matured. When the Fed provided open-ended liquidity facilities such as the commercial paper funding facility, all of a sudden people felt, ‘Okay, I'm comfortable lending to, say, General Electric and now I know how to get my money back even if other people are not comfortable because the Fed will be there to buy the commercial paper of General Electric.’

In assessing the value of the Fed's liquidity facility, it's important not to assess it on how much it's used but assess it on how much it reassures people and changes the perception of risk.

In all these kinds of situations the Fed and other bank regulators have to be very careful about proposing things that are well-suited for the problem at hand. It's really important to diagnose what's wrong first and then design the facility best suited to address the problem because the credibility of the intervention is hugely important. The announcement of the intervention is going to precede the actual implementation by several weeks or even months and so credibility is important to reassure people—The fire engines are on their way and they will put out the fire. Even though they haven't arrived yet, people will feel more comfortable that the whole city block isn't going to burn down.

It's important to be cautious about making sure you got the diagnosis right and actually coming up with responses that are credible because the next time when you introduce a liquidity facility in a crisis, you want people to respond very positively to the announcement of the facility even before it's actually in place. I think the Fed has a good record in this regard and that has made their inventions more effective.

YPFS: **Are you thinking of something specific where something wasn't well-thought out and didn't get a good response?**

Dudley: The Fed did very well managing the last crisis. Almost all the programs that were introduced worked quite well and addressed the problems that were at hand. There was one notable exception. There was a money-market fund intervention called the MMIFF (Money Market Investor Funding Facility). I didn't think it was a very useful facility at the time and I argued against implementing it, but I was overruled, and it was implemented, and it was never used.

It didn't cause any grave harm. But it did use up scarce staff resources and time. Also, I didn't want to do things that I didn't think we're going to work because I felt that there was a credibility consequence to that. At present, in the current financial crisis, one of the facilities that has been introduced and where the jury is out still is the Main Street Lending Facility. This is the one that the Fed has advanced to support medium-sized and large businesses by doing loan participations. It's something different than what the Fed has done before. It's not clear it's actually going to have much take up and be very successful.

YPFS: **It falls under the CARES (Coronavirus Aid, Relief, and Economic Security) Act?**

Dudley: Yes. This is the program in which the Fed is willing to buy 95% of a loan originated by a bank to a medium- to large-sized business. The bank is basically the loan originator. The bank keeps 5% of the loan and the Fed takes 95%. It's a very different facility than anything the Fed has done before. It was developed, in part, to try to have something that is oriented towards medium-sized and larger businesses that are still too small to assess the capital markets. I don't know that it was as well-thought out as some of the other facilities the Fed has introduced.

YPFS: When it comes to these programs, does it also matter who's in the White House at these moments in time?

Dudley: In principle it could. I don't think it mattered too much in these two crises. What's different between this current crisis and the one in 2007-09 is that the villain is completely different. The villain this time is the virus. There's pretty strong support for very aggressive interventions, both from the financial stability side, the monetary policy side, and the fiscal side. Back in 2007-09, the villains were financial institutions and financial players. There was a lot more resistance to bailing out entities. They were being bailed out not for the benefit of bailing them out, but to save the system.

There was a lot more difficulty for the authorities to explain that point. It was not, 'we're taking these actions because we want to rescue AIG or Bear Stearns but we're doing this because if we don't it will lead to a meltdown in the financial sector that's going to wreck the economy and hurt all Americans.' But when an intervention benefits bad actors it makes it more difficult to maintain the political support for the interventions.

YPFS: To your earlier point about the importance of moving in peace time and developing capital requirements and so on to be ready for the war, what about recent relaxations of capital requirements?

Dudley: I don't think that they have been of such substance that I'm worried. The direction of travel might be a slight cause for concern, but from a magnitude standpoint the changes are pretty modest. The requirements for smaller-sized banking institutions have been loosened a little bit, but they're not systemic and deposit insurance helps reduce the risk of panic and the requirements for the big banks that are systemic hasn't really changed substantively. There are still liquidity and capital stress tests. The Volcker Rule on allowing banks to invest in riskier funds such as private equity and venture capital funds is being relaxed. My own view is that kind of trading wasn't the reason why banks got into trouble during the last cycle. As long as banks are forced to hold capital and those kinds of assets and those capital requirements are calibrated correctly, I don't have a problem with banks trading in securities markets and taking positions in securities markets.

In some ways, it can help improve market function. If you had no Volcker Rule and you had no capital requirements for market risk, then you'd have a problem. But as long as you have appropriate capital requirements for market risk, I don't think the Volcker Rule relaxation is a problem. So far, at least, I'm not worried about rolling back regulation in the banking sector. I'm more worried about the lack of financial stability oversight in the non-bank sector and that the Financial Stability Oversight Council seems to be pretty inert at this point.

YPFS: **Ahead of this recent crisis, could you anticipate how this would play out? Did you see anything worrisome in the financial markets? Did you expect something to come out of the blue?**

Dudley: No. I'm no longer at the Fed so I wasn't looking at this as closely as I was before. For example, I was not aware of this leveraged Treasuries trade in the hedge-fund community. People talked about potentially a trillion dollars or more invested in this pair trade of going long cash Treasuries and shorting Treasury futures. I was unaware that this was a potential risk. I was aware about some of the issues of corporate leverage and the rapid growth in high-yield debt outstanding. I was aware of the risk there, but there were definitely areas where I wasn't aware that there was meaningful risks in financial markets.

YPFS: **Understanding that you're retired from the Fed, were you concerned about anything on the horizon that could bring about a crisis?**

Dudley: This is very different. This is a pandemic leading to a shutdown in the real economy and the shut down in the real economy generating shocks into the financial sector. The prior crisis was a housing boom turning to bust and generating a lot of stress in the financial system and some stress in the economy with the financial system breaking down eventually and that breakdown contributing to a steep downturn in economic activity. In the last crisis, the financial sector played a much bigger causal role in terms of the downturn in economic activity. This time, the financial sector has a less consequential role. The shutdown in economic activity is the source of the financial shock.

YPFS: **Had this not been the crisis, where would you have been placing bets for where the next crisis might arise?**

Dudley: I was worried about the buildup of triple-B corporate debt and the rapid rise of high-yield debt and that when we did have the next economic downturn, a lot of the triple-B debt would become junk-rated debt. There would be a lot of indigestion in the high-yield debt market. I felt that was a highly probable source of difficulty. We did see that at the start of the pandemic. In March and April, the high-yield debt market was under a

significant strain and the Fed intervened, limiting the damage in that sector. That was broadly anticipated. What was hard to anticipate this time was how sharp and sudden the economic downturn was. It was without precedent. There's never been anything like that where you just turned off the economy for a few months. That's a different source of stress than what we're used to historically.

YPFS: **What are your concerns about how we get out of this? Is it as simple as shutting it off and turning it on?**

Dudley: The coronavirus pandemic has to be resolved and that will either be by having a vaccine or a series of vaccines that are viable or it will be solved by herd immunity. Hopefully, it will be the former not the latter. As the pandemic gets abates eventually, the economy will recover. At this point, the fiscal side is more important than the monetary and financial stability side. The Fed has done a pretty good job stabilizing the financial sector. Now, the question is really going to be, is there going to be sufficient income to support a recovery in economic activity?

We don't really know the answer to that because we don't really know how much social distancing is going to be required to keep the pandemic in check. It's possible that modest social distancing and 90% of the population wearing masks at all times when in public might be able to keep the virus under control. If that's the case, then we can probably have a reasonable economic recovery. But if more social distancing is required, or people are just not willing to do that social distancing, or there's not a vaccine that's developed in a timely way, this is going to last a lot longer.

YPFS: **What about behavioral responses to this pandemic? Are there historical precedents to suggest people will no longer go out to eat or won't spend money in the same fashion they did previously?**

Dudley: There will be a behavioral response. Presumably, there'll be less travel for business. There'll still be business travel to meet with clients, but probably less business travel to meet with people in your same company. There will be some changes. It'll be interesting to see whether the pandemic has lasting consequences for people's desire to live in highly concentrated urban environments, or not. My own view is people's memories are pretty short-lived. Consider a place like New Orleans that was devastated by Katrina. Is New Orleans at risk of another hurricane doing the same thing? Absolutely. Do a lot of people still live in New Orleans? Yes. People tend to underestimate the risk of the 100-year flood. If we get a credible vaccine, I think things will go back to normal pattens of behavior more quickly than people imagine.

YPFS: **A complicating factor to all this is the social inequities that are being focused on, too. Could you have anticipated that?**

Dudley: It is very unfair that the burden of the pandemic falls differentially on blue-collar and lower-income workers. They have to go to work; their work can't be done remotely. It falls on them differentially because often they're in the higher risk group for actually getting the virus, or having more adverse outcome if they get the virus and they have less financial resources to deal with the disruption to economic activity. It creates a problem for the Federal Reserve because the Fed's tools are not really well-suited to address issues of inequality. They're just not. They're about supporting financial markets, supporting financial market conditions, supporting general economic activity. When the Fed intervenes, that supports financial markets and causes the stock market to recover and that benefits rich people and rich institutions and that's a problem for the Fed. The Fed has to be very consistent and determined to go out and explain why they're doing what they're doing, and why this is the best course for it, even though it disproportionately benefits higher-income people.

YPFS: **It's an interesting point. How did the last crisis inform your role when you took over as New York Fed president? Did your approach show the influence of that crisis?**

Dudley: We did a number of things. One, we tried to make the bank more holistic in terms of how we thought about issues. We set up a group that tries to anticipate issues and think about things that they might not otherwise want to think about. We looked at the whole supervisory process and asked ourselves the question 'Do we have the right culture in our supervision operation?' and tried to figure out how to revamp that.

We addressed some of the structural weaknesses that we saw as a result of the financial crisis. For example, the tri-party repo reform was essentially driven by the Federal Reserve Bank of New York. We got very involved in trying to get the global community to take on reference rate reform.

YPFS: **Reference rate reform? What is that? Can you explain?**

Dudley: That's the London Inter-bank Offered Rate, or LIBOR. It was a very flawed instrument as we saw during the financial crisis, both in terms of being manipulated by financial firms, but also in terms of not always being credible as an interest rate. But the manipulation was the biggest thing we were concerned about, and there was always an incentive to manipulate LIBOR because you had a relatively huge derivatives market referencing a very small cash market. There was always an incentive for people to manipulate LIBOR to benefit from their futures position, say, in the Euro

dollar futures market. So, fixing LIBOR was really important and I put a lot of pressure on people in the central banking system to take it on.

I remember writing a very short memo to Ben Bernanke when I was in Basel to encourage him to persuade Lord Mervyn King, who was a governor of the Bank of England and a chair of the Economic Consultative Committee (ECC) of the Bank of International Settlements in Basel to take on this issue of reference rate reform. The central banking community has taken this on, but it hasn't been resolved yet.

We're still in the process of doing this reference-rate transition. Obviously, we were very involved with increasing the capital requirements and liquidity requirements under the Basel III accord.

There are a lot of things that we did differently to try to be more forward thinking. The Federal Reserve Board now has a financial stability group focused on financial stability issues and publishes semi-annual financial stability reports. We had similar people in New York focusing on financial stability concerns in ways somewhat different than we had done before.

YPFS: **As you see the response from the government and Federal agencies in this latest crisis, is it clear they learned from the last one?**

Dudley: I think so. In a number of ways, we have a better monetary policy framework, which means you can offer open-ended liquidity facilities without that conflicting with your goal of controlling the Federal fund rate. This time, officials were able to move immediately to large liquidity facilities, including foreign exchange swaps, commercial paper, corporate bond, and municipal bond facilities. The Fed understood that when you're faced with these kinds of threats, it's better to respond early and forcefully. One of the lessons of the last crisis was that it was better to respond early and with force rather than late and with a weaker response because you want to get ahead of the curve. Of course, what has helped this time was all these past facilities were already on the shelf. They didn't have to think about how do we develop it? How does it work? How do we operationalize it?

The Fed knew how to do all these things and there was confidence they would work, and they could be deployed very quickly. It was known they would do what they were intended to do. That much higher confidence level allowed the Fed to move much more quickly.

YPFS: **Let's address a controversial column you wrote last summer, urging the Federal Reserve to keep monetary policy separate from politics**.

Dudley: What was happening at the time, as you recall, was President Trump was engaged in a trade war with China, and he was also blaming the Federal

Reserve for the economy and was basically prepared to blame the Federal Reserve if the economy did poorly even if the reason the economy did poorly was because of the trade war that the president was conducting with China.

That struck me as not a good place for the Federal Reserve to be. The Fed would assume the downside consequences of the trade war with China even though that wasn't of the Fed's doing. I felt as if the Fed needed to push back against the president and make the president own the consequences of his actions. There's nothing inherently wrong with the president potentially having a trade war with China. That's the president's prerogative.

But if the president is going to have a trade war with China and it turns out it goes badly, then the president needs to own that downside, not the Fed. If the president doesn't own the downside, then the president's incentives are not going to be properly aligned with the potential outcomes.

I wanted the Fed to demonstrate more independence. The article was controversial because I was pointing out that if there was a situation where you thought the economy was going to be potentially deeply damaged by a president's actions, you would probably want to take that into consideration when it came to your conduct of monetary policies. People took that to mean I was saying the Federal Reserve should act in a way to prevent the president from being reelected, but I wasn't saying that.

I think it was appropriate to write it. With the benefit of hindsight, it probably would have been better to put it in a more explicit caveat about how far I think the Fed should go in that respect.

YPFS: **You're probably a bit of a student of relations between the White House and the Federal Reserve, so have we ever seen a situation where the president has put so much pressure on the Federal Reserve?**

Dudley: There've been times in the past where the president has been unhappy with the Fed. President Reagan was unhappy with Paul Volcker and I think Richard Nixon was unhappy at least for a little while with Arthur Burns, but never quite so publicly and never in such a denigrating manner as we have witnessed in recent years.

The president has the right to disagree with the Fed on monetary policy, but by making it so personal and making it so much about individuals and denigrating those individuals, I find it unhelpful.

It's counterproductive because when the Federal Reserve does something that's consistent with what the administration wants, people can't tell if the Federal Reserve is doing it because it thinks it's the right thing to do, or the

Federal Reserve is bending to pressure that's being exerted by the administration.

What you don't want is people in the financial markets to question whether the Fed is doing this for the right reasons. To the extent that you start to raise questions about the independence of the central bank, that's going to be a negative for risk premiums and for financial markets. Robert Rubin, when he became head of the National Economic Council (NEC) under Clinton and later as Treasury Secretary, was very clear that it doesn't make sense for the administration to say critical things to the Fed because all that does is put markets on edge.

In 1992, I wrote a debate briefing book for Bill Clinton about the Federal Reserve and monetary policy and the basic message was don't say anything critical of the Fed.

YPFS: **What did you make of the abnormalities in the repo markets last September and October?**

Dudley: It was almost inevitable. The Federal Reserve had a big balance sheet with lots of excess reserves in the banking system. The Federal Reserve was gradually shrinking its balance sheet to the smallest level, consistent with the efficient execution of monetary policy. The Fed didn't really know how small was too small. They didn't really know how much reserves the banks were going to demand to meet their regulatory requirements such as the liquidity coverage ratio and the liquidity needed to have a viable resolution plan. What happened was the balance sheet shrank to a level that was smaller than the banks' demand for reserves.

Banks started to bid more aggressively for reserves in the repo market and that put upward pressure on the repo rate. We'd gotten to the point where the banks' demand for reserves was a bit higher than the supply and that demand for reserves was a little bit higher than we thought. The Fed then turned around and added reserves to the banking system by doing open-market operations and buying Treasury securities and that basically resolved the problem. It wasn't a really big problem and it was not a financial stability issue.

YPFS: **It seemed shrouded in mystery and your explanation makes perfect sense. Was it more of a communication problem?**

Dudley: The problem was that the Fed didn't know the level of underlying demand for bank reserves because the regulatory changes that have been enacted changed the demand for bank reserves. The Fed is now paying interest on bank reserves, which also changes the demand for bank reserves. A bank might want to have $75 billion of excess reserves and a cushion above that. So, it determines to carry $100 billion because every day reserves are going

up and down in reaction to client activity and payment flows. They want a buffer to ensure that they stay above $75 billion.

The need for buffers to combat the uncertainty about payment and deposit flows meant that the banking industry collectively ended up demanding more reserves than what they and the Fed anticipated. It was almost inevitable that it was going to happen at some point. It happened sooner than what anybody had anticipated.

YPFS: **Are there any new threats that you see to the global financial system that could emerge from this current period?**

Dudley: There's not a lot of new things that I'm that worried about because we just went through a tremendous amount of stress on the system. I could be missing something, but I feel better now than I did six months ago because we've actually had a test.

I think the high-yield debt market is still an area of risk.

YPFS: **What about clearing houses? I keep hearing about concerns related to collateralized obligations.**

Dudley: So far, the clearing houses have come through the crisis well. They also came through the great financial crisis in good shape. There've been a few instances in which people have been unable to meet their obligations. I think there was an energy trader that had large obligations that couldn't be met. But the clearinghouses have been able to withstand these events. The collateral requirements have generally been high enough, and there haven't been any big issues.

The fact that they came through a pretty large financial shock is good, but they need to make sure they have good risk management and appropriate collateral requirements. The real risk here is that a lot of them are for-profit institutions. As a for-profit institution, you're more inclined to go a little lighter on risk management, a little lighter on collateral requirements. Competitive pressures are always going to be pushing a little bit in the opposite direction of financial stability. It's very important that the regulatory authorities continue to exert good oversight to make sure that the profit motive doesn't become too dominant.

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

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