

General Discussion: The Panic of 2007

Chair: Martin Feldstein

Mr. Feldstein: If I could just make one comment on what Bengt said: It is certainly true foreign countries, particularly emerging-market countries and the oil producers, had a lot of funds to invest. Most of that went into Treasuries. They went into mortgages indirectly through the GSEs by buying Fannie and Freddie bonds. But, by lowering interest rates, they created an environment in which investors seeking yield were prepared to take risk and the creation of these wonderful apparently AAA securities, or AAA tranches, were just a tempting vehicle for getting more yield without apparently taking on as much risk as we now know after the fact was actually there.

Mr. Moskow: I have a question about one of the details in the paper, not the big picture. That is really on the last page of the paper where you talk about Financial Accounting Standards Board (FASB) 140. This deals with off-balance-sheet entities, or the so-called qualified special-purpose entities.

As you mentioned here the FASB is considering changes which could lead to significant modification, maybe elimination, of this provision and then could require consolidation. My understanding is this has been delayed a year, but still it is on the fast track for FASB. You say it is likely to create problems.

On the other side of this is that many believe these never should have been off balance sheet in the first place. They should have been part of the consolidated entity. If they are off balance sheet, the sponsoring entity is not supposed to have any responsibility for that off-balance-sheet entity. As these off-balance-sheet entities have problems, some large banks have brought them back on their balance sheets now, in part because of reputational risk.

The result, if you bring them on balance sheet, is there will be less leverage for that institution, and regulators will now include that in their capital ratios. Isn't this part of the deleveraging process that has to take place in order to get back to conditions of financial stability?

Mr. Gorton: I think what happened was, FASB doesn't really understand what is happening in the crisis and mistakenly thinks there is something wrong with all the securitization. So they somehow have the view that, if you force consolidation for accounting purposes, this is going to solve some problem. It is creating some problems, which, because it has been delayed in the final rule probably will look a lot different. I included that as an example of the kind of policy response that doesn't really arise from what is actually happening. An implicit contract, which says in certain states in the world, "I reconsolidate my vehicles," doesn't bother me. That's how the world thinks everything functions. I have a paper that shows that is priced. It is a problem for accountants that they don't know how to deal with implicit contracts, but I don't think that helps. It doesn't help a crisis to try to propose something, which really doesn't have anything to do with the crisis we're facing. It is misguided.

Mr. Fischer: I am also on the last page. You say, "As Merton Miller pointed out more than twenty years ago, financial innovation is largely driven by regulation and taxes. Entrepreneurs will take risk in some form, somewhere. The trends are already clear. Talent is increasingly moving to the least regulated platform: hedge funds." I'm trying to figure out what to make of that and what it says about the current situation. If hedge funds are not going to have access to the lender-of-last-resort facility—and they shouldn't—do we need to worry about where the talent is moving?

We have had one example of a hedge fund blowing up, at least one, and getting the Fed into action. That was Long-Term Capital. The Fed got into action as a coordinator of the rescue package and not as a provider of liquidity to the rescue package. I think that was more desirable than the alternative of lending to LTCM.

The question to you is, What are we to make of your last paragraph?

Mr. Lindsey: I very much liked the detail, but I would like to add another detail to your paper, Gary. This comes as a former chairman of neighborhood reinvestment.

I know it's all blamed on the subprime crisis. The fact is those loans were not demonstrably more risky. In fact, in general they were less risky than the standard mortgage until the start of this crisis. What happened was what Bengt had mentioned, which is a generalized increase in volume for all kinds of loans.

We established a basically soft quota system for Community Reinvestment Act (CRA) lending under the CRA provisions. As the aggregate volume went up—and you mentioned these same procedures were done in standard loans and in credit card loans—the volume went up for subprime loans as well. But that overwhelmed the risk-mitigation procedures which were in place. That was the reason for the default process. So there was a volume issue that should be inserted as one of the details to be given for the points you made.

Mr. Bergsten: I have two questions on Professor Holmström's big-picture, long-term view that's very attractive to me. You suggested the demand for liquid assets—parking space—was the big driver of what's happened in the housing markets more than a social demand for more housing investment. Why not both? Why not the two moving together?

But I really want to focus on the foreign side. You talk about the foreigners looking for parking space for liquid assets. But, the motivations for the buildup in foreign reserves around the world have differed substantially from country to country. In some—including the biggest one, China—it has been motivated by very traditional mercantilist objectives: Keep the exchange rate undervalued, subsidize trade

surpluses, and subsidize growth and employment creation through that device. I have interpreted what they have done as essentially an off-market export and job subsidy which, since they don't mark to market, comes under no domestic surveillance and, at least so far, has come under no effective international response either.

I have to believe that in their heart of hearts and mind of minds, they knew those subsidies would cost them something through an eventual loss in the capital value of the assets they were buying to preserve of their huge surpluses.

So how is your model affected if some of the investors essentially don't care if they take a capital loss? Because they don't mark to market or have any domestic surveillance and discipline over what they do, they are able to invest massive amounts in a way that promotes a social outcome on their side, regardless of the financial outcome.

The specifics would be different in Japan or the oil producers or other large accumulators of the assets you are talking about, but in no case do they mark to market or come under any kind of significant domestic discipline. How does that affect your analysis and does it suggest there was really a conspiracy on both sides of the equation to let prices diverge sharply from long-term equilibrium and thus set up the crisis?

Mr. Alexander: First of all, I really liked this paper. It has pulled together a lot of things I've been thinking about very much from a practical side. The question I would have for both of you relates to the connection between this and information technology and the complexity.

Partly what struck me when I read this was this story would have been impossible 10 years ago, just because of the sheer complexity of the contractual arrangements involved. When you think about that and the policy implications, I would link it back to the first part of the chairman's speech, where he talked about the critical issues of market infrastructure.

Partly what strikes me about this is the way information technology has allowed this complexity to evolve and whether or not the institutional infrastructure is really kept up. I would point out that

nobody has repealed Moore's Law. I suspect we are going to have more of these things going forward.

I would be interested in, both the author and discussant, how they see that as contributing to this.

Mr. Rajan: One thing I missed in Gary's excellent paper was why the participants did not realize the loss of information. I am not just talking about the asset managers, but the investment banks who held on to a lot of the stuff. Why did they not realize that complexity would increase multiple-fold, especially when the defaults started multiplying? What did they miss? Do we have to ultimately go to some kind of breakdown of control systems to get an explanation to that?

Mr. Trichet: I was very interested in Gary's paper and Bengt's remarks. To Gary, I would ask the following question. If it appears that the ABX indices introduction was absolutely decisive to clarify the situation and permit the market to realize the level of risks that was not visible before, could you elaborate on what would have happened had these indices been introduced earlier? Is there a lesson to draw from this situation? Should we be more involved, as regulators or overseers of markets, to deal with ways to permit the market to realize the overall risks itself? I understand that hedging activity in this particular domain has been an important factor triggering large moves in the value of these indices.

Mr. Carney: Actually, I would like to pick up where Jean-Claude left off because one of the persuasive aspects of your paper, and also your summary, was the loss of information. Investors did not know what they owned. When we lived through the ABCP debacle in Canada, the investors had the luxury of time, they had all the information because of a standstill, and they still couldn't figure out what they owned or how to evaluate it. Now they are going to have the luxury of eight more years of owning the stuff to ultimately discover its relative value. One of the big dynamics of the time—and I am getting to my question—was the uncertainty about whether the Canadian non-bank ABCP situation was going to be resolved was one of the things that fed through the ABX indices because of the hedging that was there. That explained part of the dynamic.

My question is, Given you make a case for the relative uniqueness of subprime and you look at not just the implied default probabilities of the ABX indices—but on the broader derivative indices, default probabilities which are a multiple of any potential, reasonable outcome one would expect—if you think about the CLO market particularly—what is your explanation for that? Is it hedging? Is it a war of attrition between hedge funds that can't get sufficient financing to get the proper leverage returns and real money which is just waiting to call the bond and come in?

To sum up, since one of your core arguments, I thought, was that subprime was relatively distinct from “good” securitization, if you will, why do we still have these price dynamics in the indices for good securitization (“good” is my term obviously)?

Mr. Swagel: I wanted to ask Gary about a policy proposal. It is someone else's proposal. And that is for a database on mortgage information. The idea that people talked about a securitization forum has talked about this. This loan level information would be put out by the servicers—both origination and then ongoing performance. There is some of this available at www.loanperformance.com and www.mcdash.com, but it is very imperfect. This would be more complete, more regular, and more up-to-date. The idea, as people have discussed, is to allow better analysis. So there is complexity, but at least the analysis could pierce through that complexity. We thought about it and said this would also have the benefit of allowing a reputational tail, back to the originator.

So the question is, What is your reaction, maybe why didn't it happen earlier, why didn't investors demand it, and would it be useful?

Mr. McCulley: I have one comment I am going to make about Gary's paper and then a question to ask. The comment to Gary is—I thought it was an absolutely fantastic paper; I understood every line in it—but importantly, I want to stress I disagree with your viewpoint that the buy side has no talent. I happen to be on the buy side. We have a lot of talent, so therefore I just want to say that we are an exception to your rule. We did understand it and we didn't buy it.

My question is, I found it very fascinating your describing that the private sector has to act *ex ante*, whereas the public sector can act *ex post*. Sometimes the private sector just freezes, which demands the public sector act *ex post* to try to right the situation.

It seems to me that is the framework we all learned back in graduate school about the paradox of thrift, liquidity trap, etc. If the private sector is frozen, then the public sector has to take the other side of the train. Is what you are describing now—with the deleveraging going on—simply the modern-day version of the paradox of thrift? But now it's the paradox of deleveraging. The profit sector is wrapped up in a downward spiral of deleveraging, which implies that the public sector should go the other way and lever up.

Mr. Rosengren: Systematic workouts are very difficult under the servicing agreements and current contractual obligations. I was just wondering what you thought about changing some of the contractual obligations in the governance rules in many of these securitization agreements to make it easier to have a more systematic way of dealing with workouts that don't seem to have been contemplated in the original agreements?

Mr. Gorton: Thank you very much for a lot of very good questions. Let me start by saying I agree with everything Bengt said. I am very sympathetic to the Ricardo Caballero view of the world. Bengt and I talked about what we should each say ahead of time. From my point of view, it worked out very well.

Several people read the last page of my paper and had questions on that. It makes me a little bit suspicious about whether they read the other stuff.

In response to Stan Fischer's question: I put that in there because I observe it. There is a lot of talent that goes where the money is. It is a caution to us. Your suspicions are exactly right. The financial landscape is changing so quickly I can't even keep up with it. There are firms that are mergers of hedge funds and private equity. Citadel has issued rated debt. I watch people, friends of mine from investment banks, move to hedge funds. You read the newspapers. Lloyd Blankfein of Goldman

made \$60 million last year and Ken Griffin of Citadel made \$1.2 billion. That tells you how the world is changing.

Hedge funds are entities we know almost nothing about. If you try to look at the private data sets, these are strategically manipulated by hedge funds. They report when they feel like it. They can ask if their returns be erased subsequently. There is survivor bias, look-ahead bias, there are all sorts of bias. So we literally know nothing about hedge funds. There is a tendency, and I have this tendency too, to gravitate to the least-regulated platform. That is something we have to be aware of, and Ben alluded to this in the beginning.

On Larry Lindsey's point: Subprime mortgages are demonstrably more risky, if you look at the default rates even in the early 2000s. But I agree with you that in 2006-07, for other reasons I thought that the volumes would decrease. What happened was certain institutions—those that subsequently had large writedowns—did not decrease their activity. Those would be Merrill Lynch, UBS, and Citibank. I was very shocked at that and I agree with you those vintages were very, very troubling.

There was a point—I forget who made this point—but it was related to something Bengt said. One of the points I want to emphasize in my paper is that the amount of collateralizable wealth in an economy is very hard to determine *ex ante*. If you would have asked me two years ago “Will it always be the case that I’ll be able to use agency bonds as collateral under swap CSAs and for repo?” I would have said, “Absolutely!”

In August 2007, that was not the case. The problem is that in a crisis, the amount of collateralizable wealth shrinks because of the loss of information. Somehow it can't be counted on—you can't count on any certain amount of collateralizable wealth.

The question about information technology: That is a really fascinating question. Certainly these structures would not have been possible 10 years ago. Subprime lending, *per se*, depended upon automated credit scoring and advances in credit scoring which required huge advances in being able to manipulate extremely large data-sets. It is also the case, as statistics become a more computer-driven

discipline with bootstrapping everything and simulating things, even these structures are a challenge to simulate.

From that point of view, to go to another question, it is not really a matter of the data. It is always better to have more data. The loan performance data, which is available now, doesn't really help you, if you are further along in the chain. For example, if I want to look at a 2006-vintage, second-lien subprime bond, this is something most people would run screaming from the room if we mentioned buying it (it might be a very good buy), but the structure of that bond is so complicated that you could not link the actual structure to simulate from the actual mortgage data. You cannot do that. That would require one-off coding that would take a long time. That challenge is going to be overcome very shortly, which will mean this will all be possible. The information that it's the machine power makes a lot of this extremely data-driven. That is likely to continue.

Raghu asked why did these banks hold onto this stuff and was there a breakdown in control systems. One of the points that was made in response to Charlie's talk was really good. Somebody pointed out there is cross-section variation in these firms. Not everybody has the same experience with subprime bonds. There are certain institutions, which have very different experiences. If you read, for example, the UBS Investors Report about them, you'll see pretty clearly there were problems that didn't exist in some other institutions. It doesn't strike me as something that was common to all institutions, but it was there for some institutions.

The ABX index: The guys who came up with the ABX index are four investment bankers—one from four different firms. I know these guys. The idea was to create a tradable index, but partly it was largely for hedging purposes. The interesting thing about the ABX index is the first vintage was 2006.01.

The way it works is they survey the dealers, they set a coupon, and then it's based on the price. It trades on the price. The investment banks didn't ever want to set the coupon too high because you didn't want people going long to have to pay money. So you always wanted the price to be a bit lower than par.

The first two vintages were exactly at par. When house price growth rates started to decline, the indices didn't really do anything. It was only in the 2007.01 vintage where everything fell off the cliff. I am working on another paper on this. What happened, though, is this is an index that is linked to a particular pool of subprime bonds.

So there is an arbitrage between those bonds and the index. That arbitrage broke down in 2007 because you couldn't finance the bonds through repo. Even if you could find the bonds, you couldn't finance the bonds through repo, so the index delinked from the actual bonds and the market was one-sided. Everybody wanted to buy protection. The thing just went through the floor. The result of that was the prices really had no relationship with the bonds.

To go to Mark Carney's question: The implied default probabilities of the ABX index are completely unrealistic because their arbitrage is broken down. What you're looking at is not implied default probabilities; you are looking at latent demand for hedging. This was a big problem in marking to market. If I have to mark to market on the ABX index, I'm marking to prices, which are just telling me everybody's scared out of their minds. Then I have to mark down and everybody is scared out of their minds.

That index is dead forever and it has served its purpose for a very brief period before the arbitrage broke down. The breakdown, from an academic point of view, is interesting because it is a glimpse into the magnitude of the liquidity problems in the repo market.

Just a couple of other things: I apologize to PIMCO. And then Eric's question: Is it reasonable to think about changing the servicing agreements to facilitate restructuring the mortgages? The problem is that the claimants in subprime securitizations are divergent. So in a subprime securitization, there is a number of claims that are issued publicly and then there is a whole bunch of residual claims to various cashflows. If I make a prepayment penalty payment on my mortgage, that goes to the securitization and that goes to a certain claimant.

Not all of these interests are aligned. The servicers have a lot of skin in the game here. They are doing their best, but if you say to them, "Why don't you just restructure these things?" the answer is they are

going to be sued. And that's why there was this discussion that maybe Congress should give them immunity or something. There is no easy way around that without screwing some of the claimants here. That is just the reality of the situation.

An easier way out is not even to go down that road. It is to somehow have a mechanism to allow people to refinance without having to change the servicing agreements.

Mr. Holmström: Let me just comment on a few things. Stan's question about hedge funds brings up one important point. One implication of the big-picture view I sketched out in my comment is that other actors that are more proficient in information-intensive financing will step in and play a very important role in the rescue effort.

On Fred Bergsten's question: It is not that important why foreigners came to demand American assets? I just told Caballero's story because I find it compelling. That said, a lot—more than 50 percent—of foreign investment came from non-government sources, especially from Europeans. I am not exactly sure what you meant by a conspiracy, but I'm rather suspicious of conspiracy theories at this scale.

I also want to comment on Raghu's question, why buyers in the chain didn't realize that there was a loss of information. My simple answer is that they weren't even looking for that information. The market for liquidity is set up so that buyers don't have to worry about information asymmetries. A high-volume market will not have the time to evaluate individual instruments. But that's what they have ended up doing now, causing great damage to liquidity. Reinventing the wheel is a time honored way of making progress. If this is just the paradox of thrift, that's of little help. I don't think we have a good theory of how society should ensure and provide liquidity, even in the most ideal of circumstances.