

General Discussion: The Ins and Outs of LSAPs

Chair: Stanley Fischer

Mr. Lindsey: I thought this was a very interesting paper on event studies. There is a general problem here and that is shown somewhat in the unwind after the event takes place and Anil Kashyap, I thought, said it well, that it's difficult to parse things out. The basic problem is the GSEs, the Treasuries and dare I say the Fed are all part of the same balance sheet, if one steps back far enough and takes a look at it. I found your conclusion that the effect on GSE purchases was greater, an interesting one and I'm going to suggest a political market reason for it. In the time that a lot of this took place there was actually a lot of doubt in Washington that got permeated to the street that the ultimate guarantee of the GSEs was going to hold and that was particularly true with prospective bonds. So what you have may have seen is because the Fed stepped in and put the GSE paper on *its* balance sheet it was in effect taking that risk off the table. That's why you saw an outsized move in GSE yields compared to Treasury yields and, in effect, the nationalization of it onto the Fed balance sheet was an important part of allaying political risk.

Mr. Taylor: I have two quick points. Almost all the empirical analysis is based on these events and announcements and I think it just doesn't provide enough information. You don't see the reactions after a week or two weeks or three weeks, and the quantities are not even

considered. Johannes Stroebel and I investigated the MBS part of QE1 trying to use the quantities, trying to take into account other risks. We found that there was very little effect on option-adjusted spreads and to the extent there was an effect the quantities didn't matter—it was more the existence of program itself. That confirms Larry Lindsey's point that there was something else going on. So, I think you have to be very aware of this problem. Another thing, regarding the impact of QE3, consider the overall scheme of things: In September of last year, QE3 is announced and in December of last year it is announced that QE3 is going to be about twice as large. The 10-year rate was about 1.7 percent on both those announcement days. It's now 2.9 percent. To think about this whole policy as having a beneficial effect on rates just doesn't make sense to me, if you think about it in that context. Second, I think it's a great idea to have some kind of policy rule for LSAPs but if you think about how policy rules were developed for the interest rate, they were based on models where people had information about the size of the impact of the change in the interest rate on the economy. We aren't even close to that at this point regarding LSAPs, so I very much applaud the idea of getting some policy rules for LSAPs, but it just seems we don't have the information for that right now.

Mr. Portes: Two questions. One, Arvind Krishnamurthy said the main cost of continuing purchases is balance-sheet growth. Now if what you're searching for is an optimal exit policy, you've got to think about the cost and benefits, and the distinction here between cessation of purchases and sales seems to me rather important. I put to you a question we discussed informally yesterday evening. What's the cost of this so-called bloated balance sheet? Does it matter? Should we really care very much about the sales as opposed to the cessation of purchases? My second point is that your discussion in the paper ignores the effect of foreign demand on the Treasuries market, and that is something that you've both worked on. To what extent should that enter into considerations about optimal management of the exit? To make the point concrete, apparently last month both Japan and China reversed their purchases and actually sold net U.S. Treasuries. The numbers aren't small relative to the flow of LSAPs, and so, could

that have been responsible perhaps for a lot of the uptick in yields that we saw?

Mr. Kroszner: Two points. One, at some point the Fed talked about changes in its likely exit strategy in terms of asset sales, whether the asset sales would come earlier or come later. So it might be interesting to do an event study on announcements related to that to try to test your view that the asset sales will not be the important market-moving event on the way out. Second, I'd like to second what a number of people have said and what you have also said. I think there should be symmetry in the communication on interest rates, on asset purchases so there should be just as much information being given about one as the other. There is really no reason for them to be different in principle. It may be more difficult but the key tool of monetary policy is talking about asset purchases now, so giving more information on that would be valuable. So I think doing some of the kinds of event type studies that you have done on announcements and looking at the different context in which those events are being considered might be important. This is getting at Anil Kashyap's point, so in some sense looking at and conditioning on some of these factors of heterogeneity—or perhaps some other volatility measures or some other things that are in the market—to see how the announcements are taken because the same announcement could have a different effect in a different context.

Ms. Vissing-Jorgensen: I think I'll respectfully disagree with Anil Kashyap about his interpretation of the table showing there was a lot of disagreement in the market about which policies would be used. Maybe it's not so much market failure but communications failure. I had a discussion over coffee with Narayana (Kocherlakota) about how the fact that the federal fund futures curves moved so much on that June 19 date really does indicate that the market is having a hard time separating out communication about the different policies.

With respect to the identification, we have taken great care to have as few event dates as possible in our study in order to emphasize the channels and not the magnitudes. We have been conservative in the sense that if we weren't sure a particular date was important then we would just drop it in order to focus on the channels. John

Taylor brought up the possibility of using longer horizon periods. But I think that runs the risk of reaching the wrong conclusion because if you have a case in which the Fed takes some action and then the economy (for other reasons) gets worse, the Fed takes more action. If you run a predictive regression of those actions and predict what happens, you could in principle get to the wrong conclusion. I understand that there are a lot of things that are problematic with event studies but using longer horizons becomes, I think, even more problematic.

With respect to the issue of the exchange rate and the S&P moves on the same dates, I think we've heard a lot of comments from developing countries that those exchange rate moves were not driven by other factors than QE, that specifically it was the U.S. trying to basically manipulate the dollar. The fact that those variables move on the same date, I think, could be causal and that is not necessarily a problem for the study.

Mr. Krishnamurthy: I want to follow up on Annette Vissing-Jorgensen's response. Anil Kashyap said there was uncertainty about the measured magnitudes of the LSAP effects. I think we agree with that. But it is important to note that all of our policy conclusions are drawn from measuring relative effects on different asset prices, say on MBS versus Treasuries. We are probably off on measuring absolute magnitudes, but the relative rankings of which asset prices move more are likely to be accurately measured.

I also want to address another comment which came up a couple of times. I think it is probably true that the MBS purchases in 2008-09 had some effect on MBS prices via a perceived strengthening of the government's guarantee of the GSEs, but that factor is likely to be unimportant for the MBS effects we document beyond 2009.

Mr. Blinder: I have two questions, one a general one, one a very specific one. Arvind Krishnamurthy was talking about, as the paper does, about a desire for a kind of symmetry between the way we look at reaction functions for LSAPs and the way we look at reaction functions for short-term interest rates. But isn't there an important difference? The conventional way of thinking about preannouncing,

or giving forward guidance about, the forward track of short rates is that we are trying to move long rates via expectations channels that we all know about—but which don't quite work. There is a well-worked out theory, but it's wrong. By contrast, LSAPs try to bring down long rates by going right into those markets and buying or selling the securities to move the price. And one big message from your paper, I think to a surprising extent, is how surgically focused on particular assets these things look, as opposed to a more generic view based on quasi-arbitrage across securities. So that seems to make those two forms of forward guidance very different. No? I see you're shaking your head. Okay, that's why I'm asking the question.

My specific question is on a quotation from Page 4 about minimal effects from selling, or ceasing to buy, Treasuries or in principle announcing that you will. It says, "While it will raise the rates on long-term Treasuries and affect financing conditions for the U.S. government, it will have limited negative consequences to private borrowers." Don't you want to retract that statement given what happened to a wide variety of private interest rates recently?

Ms. Malmgren: It was interesting that the premise of the discussion was that we have to find the best way to control prices or manage market reactions as we exit from these asset purchases. And yet the whole purpose of the exit is to relinquish control over prices back to the markets. I thought it was interesting to then pose the question: How do we shift from a world where the central bank treats the market as a tool or even a target and returns back to a world where the market is a reflection of risk assessment? In other words, do we want to tightly control and/or suppress market reaction? Or do we want to know how the market is pricing the risk as we relinquish control over the outcome?

Mr. Kohn: Seems to me the paper doesn't comport very well with the experience of the last couple months. We've had a broad, very broad range of asset price changes. In the paper you look at expected federal funds rates over a couple days around the June thing. But those expected federal fund rates came back down again after the chairman answered some questions, gave some speeches, other members of the committee, and yet asset prices didn't come close to recovering where they were when some of these other announcements

were made. So, there is some other mechanism going on and whether it's Anil Kashyap's optimists or does Hyun Song Shin's point about a switch in terms of people's attitudes ... there is something missing here. I don't think it helps to really understand and explain what's happened in markets the last month or two.

Ms. Reinhart: This is related to Richard Portes' point. Emerging market central banks are massive holders, as you know, of reserves and so you asked the question: How do we optimally manage an exit? The related question is how do we optimally manage somebody else's exit and those exits have often been very far from orderly, far from sequencing. They've involved crises situations. I'm wondering whether you can look at event studies of massive sales of Treasuries around crises episodes and somehow try to incorporate that in the analysis. I think this affects both the expectations, the market expectations, as well as the mechanics. Right now every time I talk about emerging markets losing reserves, the question I get is—What does it mean for our interest rate? So, I think we have two exits to manage here.

Mr. Signorini: A couple of comments, or questions actually. One of the main points in your paper is that QE works mainly through narrow channels, i.e. it affects mostly the specific assets that are being purchased. The first question is therefore, does this mean that you think that it might have been useful for the Fed to consider an even broader set of assets for action? The second question is the following. Your point about purchases of Treasuries is that this is a blunt instrument and you even say that it may have ambiguous welfare consequences. The main reason for that seems to be that there are not enough substitutes in the form of private sector safe assets. But this does not consider the possibility that these developments might have spurred a re-balancing of portfolios in favor of foreign safe assets, with consequences in terms of capital movements and exchange rates and therefore possible indirect consequences for the economy. So, I would like to hear your thoughts about that. Thanks.

Mr. Eichengreen: The result for MBS is provocative and for me new. I wonder whether your results can help us understand better, large sales of noncurrent MBS surely would spill over into the current coupon market. Can you tell us something about magnitudes?

Mr. Bullard: I just wanted to push back against this conclusion that you get an effect in one segmented market and then there is not that much arbitrage across a wide variety of assets. What you are saying is that there is a surprise that occurs on a day the Fed comes and says we are going to buy a lot of MBS. Somebody's got to set up that arbitrage and get involved and that might take a couple days or something. So what you are really saying is that whatever arbitrage is there is not instantaneous but probably that occurs eventually. So I would caution listeners here to take too much out of that result that you can surgically strike at one market and permanently lower the rate there.

Mr. Feldstein: Two very quick comments, first supports the thing you just heard and that is the conclusion that Treasury purchases have limited spillover effects, I find doesn't fit with the fact that we've seen dramatic increases in the prices of agricultural land, declines in interest rates on junk bonds and emerging market debt, retail demand for hedge fund assets. So, I think it turned out with a lag to be quite broad. The second is the comment that the purchases of Treasuries may have a negative welfare effect that we don't have enough Treasury bonds around. I thought the deficit was solving that problem. We've added more than \$5 trillion to the supply of Treasury bonds over the last half-dozen years so I don't think we have a great shortage of those.

Mr. Kashyap: I perhaps mistakenly assumed that everybody understood this whole thing about the difference of opinions comes from Geanakoplos' model, but if it turns out that when we start tapering we get more of this volatility maybe we'll begin talking about a Geanakoplos moment instead of just Minsky moments.

Mr. Krishnamurthy: Thanks for all these comments; I'm not going to answer all of them. I'm happy to take them all after the session, let me just answer a couple of them. First, Alan Blinder you asked a question about the symmetry of LSAPs versus short-term interest rates and forward guidance—and I do think they should be treated symmetrically and the reason is because both policies target long-term assets. It's not just that the Fed buys today and asset prices move today. In fact if the Fed says it will buy in six months, asset prices will

move today. That immediately tells you that the kind of theory for how you want to think about the effects of LSAPs on asset prices is similar to the usual asset pricing theory in which prices are forward looking, which is the theory you would use in order to think about forward guidance whereby the Fed makes announcements today about interest rates in the future and these announcements have an effect on asset prices today. A static supply-demand theory for how LSAPs move asset prices is not applicable. One needs to think about the dynamics of prices in order to understand the effects of LSAPs on prices and that's the connection with forward guidance.

There have also been a number of comments about movements in yields over the last couple of months, suggesting that our paper cannot explain these movements and hence casting doubt on our conclusions. First, I would say there are many factors that move asset prices over a period of months, among which are the factors discussed in the paper. It is inappropriate to use the asset price movements over the last few months as a litmus test for the paper. Second, one of the points that we make in the June 19 event study is that market expectations of the path of the federal funds rate change over this event. Investors anticipate that the Fed will tighten more quickly. The change in expectations of the path of the federal funds rate, and expectations of tightening, continue well past June 19. If you look at federal fund futures from say the beginning of May until now in August you will see that the market has substantially changed its expectation over the path of the federal funds rate. This shift in expectations by itself will have substantial effects on long rates. There are other effects that you could imagine; there is a recent paper by Jeremy Stein and Sam Hanson that documents that long rates systematically overreact to changes in short rates. The overreaction appears consistent with investors' search for yield behavior in response to movements in short-term rates; this factor for long-term rates has nothing to do with QE, but could be an effect that has played out in the market over the last few months. So, I'm not willing to retract our paper based upon what has happened over the last few months. I also wouldn't say that the factors we identify can completely explain the movements in prices over the last few months. But as I have said, that is an unrealistic standard by which to judge the paper.

Ms. Vissing-Jorgensen: A comment on the same event. Given that the exit is about both Treasuries and MBS, I don't think you can look at our table and sort of pull out a number that says anything we said was incorrect. The thing I would say in terms of an implication, which is interesting, is if you think about the last few months, either the economy improved and rates went up or it was about the exit. There are two variables that are helpful for sorting this out. If you look at what happened to inflation swaps and CDSs, if you think it through, they are going to move in opposite directions as a function of whether the economy is improving or whether it's about the exit. I think in that light it is interesting to look at the exit table that we have that the inflation swaps go down and the CDSs go up. Which clearly suggests that what's happening in the exit must have a causally contractionary impact on the economy.

Mr. Krishnamurthy: Two more responses. Jim Bullard raised a point that arbitrage effects take time, which may invalidate an event study approach. I think one of the interesting things about all of the events that we study is that these are not events in which the Fed is actually purchasing assets. They are events where the Fed announces asset purchases. So, if one was to think about a micro structure channel whereby the Fed is purchasing particular assets, causing investors to set up positions to accommodate these purchases, and hence pushing prices, none of the effects that we document are via this micro structure channel. The fact that the prices move based on Fed announcements tells you that arbitrage effects are happening quickly.

Marty Feldstein made a point about how Treasury purchases have had a far-reaching impact on many markets, including commodity prices. I'm sure that some people are aware that while the Fed has been purchasing long-term Treasuries, the U.S. Treasury has been issuing long-term Treasuries and that on net the public holdings of long-term Treasuries has increased and not decreased. If one thinks that the Fed's purchases of long-term Treasuries are so potent as to create all of these spillover effects, one should similarly think that the Treasury's issuance of long-term Treasuries would be similarly potent in reversing the Fed's effects. So the far reaching effects that Marty points to couldn't be due to Fed-induced changes in Treasury supply.

