

# General Discussion: Funding Quantitative Easing to Target Inflation

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*Chair: Kristin J. Forbes*

**Mr. Meltzer:** My comment is on quantitative easing (QE). When I hear a term on QE, which has no proper meaning, my antennae go up because I ask, what are the officials trying to hide? In this case, they were clearly trying to hide the fact that they were resuming competitive devaluation. Other countries have now followed and been even less circumspect about the fact that they were engaging in competitive devaluation. Competitive devaluation was tried in the 1930s, and unsuccessfully, and the result was that around that time major countries agreed they would not engage in competitive devaluation ever again. So it's a shame to see that that pledge has been broken probably not for the first time. We might ask, and we should ask, is it being helpful? Is there a benefit for the cost that we pay for breaking that agreement? Well, the United States may have had some temporary advantage until other countries joined in competitive devaluation, but the Third World countries have certainly taken a beating as a result of this. Now I am not in favor of the Fed becoming something like the World Central Bank, but I do believe that in thinking about its policies, the Federal Reserve should have an eye on the fact that it is deliberately choosing things which are harmful to countries other than to emerging market countries, and one only has to look at the frequent statements by former Governor Raghuram Rajan to

understand that they understand what the effect of QE has been. So I would hope that from this point forward, the Federal Reserve would take the lead in trying to restore the agreement which said no more competitive devaluations.

**Mr. Bullard:** I like the paper a lot. I want to correct some revisionist history that's based on ocular econometrics here about QE2 because part of the paper is about the idea that the QE doesn't affect inflation. So for QE2, in the summer of 2010, inflation was very low and expected inflation measured by market-based measures was very low. That led me to become an advocate for QE2. I published a paper, and in August we met here, then-Chairman Ben Bernanke gave a speech, and there was a run-up to QE2 during the fall of 2010. Then we got to Nov. 3. Then by the time the actual thing occurred, of course there was no reaction because it was all baked into the market by the time that occurred. Now, you say, well was it effective? Well, so a year later after you had implemented QE2, January 2012, core inflation, year-over-year core inflation, was at target of 2 percent in the United States, and headline inflation was above 2 percent. I actually thought at that point that our job was done. I thought we had survived the crisis and we had done everything that we needed to do. To me, that was a very successful program at least in terms of maybe shocking markets a little bit, the way Laura Veldkamp had described that we were going to go back into QE when markets didn't expect it, and I thought it drove market-based expectations and it drove us back to our inflation targets. I thought it was very successful in that regard. You're saying no impact whatsoever from this thing. I also think the success of QE2 was part of what informed us to go to QE3. I'm pushing back against your revisionist history on that.

**Mr. Dudley:** Jim Bullard's point was that the event studies, for them to be valid, it's got to be a surprise, and you could argue that it wasn't that much of a surprise so therefore inflation density functions shouldn't have moved. But I think abstracting from event studies, if you think the Federal Reserve has tools that are effective and is going to do whatever it takes to achieve its objectives, you shouldn't expect the density functions to move. In other words, if QE2 is needed, QE2 will be forthcoming; if QE3 is needed, QE3 will be forthcoming; and

so the inflation density functions shouldn't shift at all because all that happens is the Federal Reserve is implementing the tools needed to follow through on its mandate. Now you look at QE1 in March 18, 2009, I think there really was a question then whether the Fed was actually going to be able to achieve its objectives because at that point in time the possibility of a global depression was still very much in place. But after that, I think that people basically thought the Fed was going to be effective in achieving its objectives and whether we did QE or didn't do QE didn't have much effect on expectations.

**Mr. Goodfriend:** I have two comments. My first is about Ricardo Reis' point that there's plenty of seigniorage for the Fed to draw on to finance its policies. It used to be the case that the Fed has first claim on the seigniorage. Now, however, legislation has given first claim on the Fed's seigniorage to another agency, namely, The Consumer Finance Protection Bureau. This budgetary appropriation is a relatively small share of Fed seigniorage at the moment. But the share of Fed seigniorage appropriated may rise because future legislation may appropriate Fed seigniorage for this or other purposes and/or because available seigniorage may shrink back with the balance sheet to historic norms. The second comment I want to make is that Laura Veldkamp's evidence of higher tail risk seems consistent with what I pointed out in my paper presentation yesterday: that the term premium, or price of risk transfer in U.S. bond rates appears to have fallen by as much as 2 percentage points since the mid-1990s, reflecting the perceived shift from cyclical "inflation-fighting" risk which is costly for long bonds, to cyclical "recession-deflation-fighting" risk, against which long bonds are actually a hedge.

**Mr. Reis:** Thank you for the comments so far, and especially to Laura Veldkamp. On Laura's point that we need to consider the portfolio choice of banks, I agree. When I represent the demand for reserves as horizontal, I am stating that banks are relatively indifferent between holding Treasury bills or money market accounts and reserves as part of their safe asset portfolio. The total demand by banks for safe assets vis-à-vis risky assets is important, but within those two categories, banks are substituting between its components. So, I can ignore the next level choice between safe versus risky assets and focus

only on the choice among safe assets. This separation of choices does not imply that the safety of the assets doesn't matter.

On Allan Meltzer's point, I started my talk by defining QE as an increase in reserves to buy assets. That's what allowed me to then call QE1, 2, 3 and 4 different things like large-scale asset purchases, reversals of maturity, or the tapering crisis. Those are all QE in that they're all news about how many reserves will be outstanding and issued, even though from the perspective of which assets were bought, these were all different programs which you may like more or less.

On Jim Bullard and Bill Dudley's point, I put on the plot the Nov. 10 date on QE2. But I followed the literature on the QE2 dates so I also did the same exercise for Aug. 10, 2010, Sept. 21, 2010, and you see the same pattern in all of them. This is also true of the many dates in QE1 and 3. Clearly I picked the wrong date on QE2 because I had three and I picked the one date that you object to. But on the other two, it looks exactly the same. There's absolutely no change in the inflation densities whatsoever. Moreover, and partly in response to Bill, there is a vast literature that has shown that in all of these dates there were effects on interest rate spreads of these programs. So there are some surprises. The financial markets were not anticipating them completely because there are changes in many different financial prices that have led to a very rich discussion of the effect of these programs. And yet, what I'm showing is that for inflation there is not much of an effect. There are clear surprises in financial markets. They just didn't seem to shift inflation expectation. More generally of course the identification of monetary policy shocks is a very difficult one, and this exercise is subject to all of its problems.

On Marvin Goodfriend's point, I couldn't agree more and I think this goes back to Chris Sims' lunch talk presentation and to a lot of my recent research work. The interaction between fiscal and monetary policy, especially once there are large balance sheets; the interaction between what claims can the central bank have on seignorage, what it has to return to the Treasury, to what extent can it be recapitalized or not; these are all first order issues once one has a balance sheet. And I couldn't agree more that seignorage revisions are important. But I would say that QE, or having more than 1 trillion

of reserves, did not create these issues. It just made them more apparent, and that is good because the issue is very important. I would also mention following Kristin Forbes' cue from the last session, that in most countries on the asset side you have foreign reserves. As a result central banks lose money all the time because the exchange rates change. In all these countries therefore, these relationships between monetary and fiscal policy, these claims on seigniorage, what needs to be remitted to the Treasury, are very often very well spelled out. Peter Stella already mentioned some for a couple of cases. In all these countries, these things have been thought out more clearly than they perhaps have been in the United States and in other advanced countries which have not faced such volatility in terms of the central banks' income flows. Other countries have certainly addressed them and they will continue to be addressed.

**Mr. De Gregorio:** I have a question for Ricardo Reis. He mentioned in the paper that one of the first countries, or the first country that expanded massively their balance sheet was the Bank of Japan in 2001 with the policy of targeting excess reserves. So I would like to know what's your view on the effectiveness of this policy?

**Mr. Kimball:** This is a question for both of you because you've questioned some of the channels through which QE might affect the economy. Yesterday, Chair Yellen showed a chart where the combination of QE and forward guidance could do almost as well as lowering interest rates by 400 basis points. Given your read on QE being a little different, but adding in the forward guidance, do you think that assessment of how well QE and forward guidance alone without deeper interest rate cuts could stabilize the economy is realistic?

**Ms. Forbes:** I'll take the chair's prerogative and throw in one question. You argued that the United States is saturated with reserves. I was wondering if you had looked at that for other countries such as hypothetically the U.K. might be of interest? Why don't you answer those three, please?

**Mr. Reis:** I can answer right away the last of José De Gregorio's first question. For this paper, I looked at the data and thought with some care about the United States so I can't really comment on Japan or the U.K. My prior for those countries coming from the

arguments in this paper, which I'm extremely willing to let the data change and reject, is that in Japan the first rounds of QE saturated the market for reserves but further rounds of QE may have had wonderful effects on lending by banks, financial stability, or real activity but, to first approximation, had very little effect on inflation. This is a prior, not a data statement. I can't say much more about the U.K. when it comes to Kristin Forbes' question. On Miles Kimball's question, the point that I am making is that in spite of all of the richness in asset purchases and all the diversity of assets in the balance sheet, in spite of this being perhaps a new world where the market for reserves is saturated, I am making a strong claim that we are back to normal in the sense that it is interest rate policy that controls inflation. Whether interest rates are negative or positive, whether they follow rules or using discretion, whether that is with more forward guidance or less forward guidance, we have a long literature and history of thinking about these issues. I am arguing that we should discuss interest rate policy as the primary way to control inflation.

**Mr. Greenwood:** I wanted to pile on a little bit on some of the comments regarding event studies. I worry a little bit that what we're getting from the event study is just the market's model of how QE works, and I'm wondering whether how much weight you want to put on that model. Now, I guess you might counter to that, well in QE1 we learned something very important from that. But it's a little different from when we do our event studies such as you mentioned Arvind Krishnamurthy's event study on QE where really there's a bunch of real money rates that are moving, and a lot of people are sort of borrowing and lending. Whereas here, how much is this really ... for example, suppose we found out that a year or two years later, there was actually a massive effect on inflation, but people had the wrong model at the time? You would say, well actually it was quite a success. So I'm just wondering how you kind of think about that in the context of your paper.

**Ms. Veldkamp:** I was going to respond to what Miles Kimball said. Yes, I believe in forward guidance. I think that that is an effective tool for controlling expectations, but I don't think that that eliminates the fear of tail risk. I'm not sure what in those scatterplots would lead us

to believe a financial crisis is not possible. To Marvin Goodfriend's point, thank you very much for the suggestion to look at term premium. I'll go take a look and see if that's consistent with our model.

**Mr. Reis:** I want to finish with three points. First, I want to make clear that what I was suggesting here was going back to normal. Going back to normal means thinking about interest rates to control inflation, consistent with what Chair Yellen said yesterday. Interest rates, Taylor rules, or whatever other rules, forward guidance, those are the ways to control inflation, and those are effective today. If anything, I have suggested that they may be even more effective with the saturation of the market for reserves, and they are the right way to control inflation. So in many ways, I don't want this to be read, as someone commented, as a radical paper. This is a very conservative paper in most of its message.

Where it was more radical (but not much) was first in saying that a more effective way to use interest rates to control inflation was in terms of the reserve repo rate and the interest on reserves, instead of the federal funds rate. Interest-rate rules should be based on the reserve rate, not the federal funds markets. Second, I suggested that QE, and other policies like the gap between the reserve repo rate and the rate of reserves, can be directed to financial stability. I pushed against the argument that we do not have other tools for other goals beyond interest rates and inflation. We can use the interest on reserves to focus on inflation, and use those other spreads and QE to focus on other goals, like financial stability. But I noted that in order to do so the balance sheet has to be large enough to saturate the market for reserves. A lean balance sheet is not zero reserves; it is \$1 trillion reserves. If we go back to less than that in terms of reserves, all of a sudden you don't have the independent tools, interest rates are not enough, and QE and other policies will have an effect on inflation. Finally, when I suggested "But you can even do crazy things, term deposits, indexed reserves," I was not suggesting in any way that we should do that tomorrow. If things really get out of hand in terms of our ability to control inflation, I was arguing that we do have radical tools even within the focus on inflation and on interest rates controlling inflation. Focusing on reserves is the key to understand inflation.

To conclude on expectations, I never replied to Robin Greenwood. I essentially agree with what you said in that I think this is one attempt of measuring the effects of QE. It is probably not decisive and I am open to see other studies that show that there has been another effect. Ultimately, I think expectations are important, and especially tail risk, like Laura emphasized. Especially given my research, I don't want to defend rational expectations. But, there is a minimal amount of rationality in that expectations are about something, about some fundamental. What I suggested here is that, whether it's tail risk or expectations, it should be about interest rate policy. When we think about inflation, we should focus on that, interest rates on reserves. When we're thinking about financial stability and real activity, it is expectations about collapse in financial markets or others. I don't think it's enough to say it's about expectations and beliefs. You have expectations and beliefs about what? I've argued here that if you want to think about inflation, and this is very narrow all I'm talking about is inflation and there are many other things that we spent the last two days talking about, but when it comes to inflation, it's expectations on what is the interest on reserves not the quantity of reserves.