

## EXIT

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### Introduction

It is a pleasure to be here today with my old colleagues and friends. I spent the better part of 15 years as a member of the Shadow Open Market Committee and served as its co-chair with Anna Schwartz for part of that time. It was a valuable experience and I learned a great deal from our discussions and debates concerning policy.

When I accepted the position with the Federal Reserve Bank of Philadelphia in 2006, some of my colleagues thought that I had gone over to the dark side. I preferred to think of it as trying to help put the lessons of modern macroeconomics and monetary theory to work in the making of policy. That has turned out to be easier said than done for a number of reasons, not the least of which is the onset of the greatest financial crisis since the Great Depression. Some might think, based on temporal ordering or a test of Granger causality, that it was my arrival at the Fed that actually caused the crisis. Yet, we should be cautious in drawing conclusions about causation from such evidence. Personally, I prefer to think the crisis occurred despite my arrival at the Fed. But that is a story for another day.

The financial crisis was, indeed, an extraordinary event, and the Federal Reserve's decisions to adopt nontraditional policies in an attempt to stabilize financial markets and the real economy have taken it far from the traditional and well-understood operating framework for conducting monetary policy. Our traditional instrument of monetary policy – the federal funds rate – has been near zero for more than two years and is controlled within a range but not precisely. The Fed's balance sheet is nearly three times as large as it was before the crisis, and it is heavily weighted toward long-term Treasuries and mortgage-related assets.

Although recent global events have created some uncertainties, the apparent strengthening of the U.S. economy suggests it is prudent for policymakers to develop a strategy for the normalization of monetary policy. Today I want to suggest such a strategy. As always, and perhaps particularly so today, the views I express are my own and do not necessarily represent those of the Federal Reserve System or my colleagues on the Federal Open Market Committee.

## **Economic Outlook**

Let me begin by noting that the economy has gained significant strength and momentum since late last summer and seems to be on a much firmer foundation going forward. Consumer spending continues to expand at a reasonably robust pace, and business investment, particularly on equipment and software, continues to support overall growth. Labor market conditions are improving. Firms are adding to their payrolls, which will result in continued modest declines in the unemployment rate. The residential and commercial real estate sectors remain weak but appear to have stabilized. Nevertheless, I do not believe that weakness in these sectors will prevent a broader economic recovery. Indeed, the nonresidential real estate sector is likely to improve as the overall economy gains ground.

The tragic events in Japan and the potential for sharply higher oil prices given the turmoil in the Middle East and North Africa pose some risk to our recovery. Yet, I believe this risk is small and short term, assuming Japan is able to stabilize its nuclear reactors and political unrest in the Middle East does not dramatically disrupt Saudi Arabia, the region's largest oil producer.

If this forecast is broadly accurate, then monetary policy will have to reverse course in the not-too-distant future and begin to remove the massive amount of accommodation it has supplied to the economy. Failure to do so in a timely manner could have serious consequences for inflation and economic stability in the future. To avoid this outcome, the Fed must confront at least two challenges. The first is selecting the appropriate time to begin unwinding the accommodation. The second is how to use the available tools to move monetary policy toward a more neutral stance over time. Policymakers will have to consider other important and broader issues as well, including the scope of central bank responsibilities, the appropriate demarcation between monetary and fiscal policies, and the moral hazard implications of our nontraditional actions. But these are

not my topic for today, as I have spoken on these issues elsewhere.<sup>1</sup> Nor will I be focusing on the choice of when to begin reversing course. That, too, is a difficult issue, but not an unusual one.

My focus today will be on the design of an exit strategy. How do we execute an exit from extraordinary accommodation and nontraditional policies and move toward a more traditional operating framework for monetary policy?

### **The Monetary Policy Operating Framework After Exit**

In designing an effective exit strategy, we must start by deciding what the operating framework should look like at the end of the process. We must then articulate a systematic approach that will get us to that framework in a reasonable time frame. The approach must be easily communicated and thus transparent to the public and the markets, so that they understand not just where we are headed but how we plan to get there.

Of course, monetary policy actions should be dependent on economic conditions, that is, state contingent, and the exit strategy should be as well. While there is very little economic theory to guide systematic policymaking using nontraditional tools, we nonetheless should not act with complete discretion. I have frequently advocated a systematic approach to policy and our exit strategy should be no different.<sup>2</sup> Such a systematic approach reduces uncertainty by offering a degree of commitment by policymakers to the exit strategy.

So where do we want to go? My preferred operating framework for conducting monetary policy in the future has four elements.

First, monetary policy should operate using the federal funds rate as its policy instrument. Because the Fed can now pay interest on reserves, monetary policy could use the interest rate on reserves (IOR) as its instrument, establishing a floor for rates and allow reserves to be supplied in an elastic manner.<sup>3</sup> However, targeting the federal funds rate is more familiar to both the markets and policymakers than is an administered rate paid on reserves. To make the funds rate the primary policy

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<sup>1</sup> See Plosser (2011), (2010), (2009a), (2009b).

<sup>2</sup> See Plosser (2008), (2009a), (2010).

<sup>3</sup> It is possible to distinguish the interest rate paid on required reserves from the rate paid on excess reserves, but we can ignore that complication for my purposes here.

instrument, the target federal funds rate would be set above the rate paid on reserves and below the discount or primary credit rate that banks pay when they borrow from the Fed. This operating framework is sometimes referred to as a corridor or channel system and is used by a number of other central banks around the world.<sup>4</sup> I have argued elsewhere that our goal should be to operate with a corridor system instead of a floor system, in part because it constrains the size of the balance sheet while the floor system does not.<sup>5</sup>

The second element of the environment follows from the first. To ensure that the funds rate constitutes a viable policy instrument and thus is above the interest rate on reserves, the volume of reserves in the banking system must shrink to the point where the demand for reserves is consistent with the targeted funds rate. This will require a significant reduction in the size of the Fed's balance sheet, with reserve balances falling by \$1.4 trillion to \$1.5 trillion to about \$50 billion.

The third characteristic of my preferred operating environment has to do with the composition of the Fed's assets and in particular the System Open Market Account, or SOMA, portfolio. I believe this portfolio should consist predominantly of U.S. Treasury securities concentrated in short-term issues, similar to its composition prior to the crisis. At that time, about 90 percent of the SOMA assets were Treasuries, of which about 35 percent were Treasury bills. Currently, only about 60 percent of the portfolio is in Treasuries, while around 40 percent is housing-related assets, such as mortgage-backed securities (MBS). Moreover, Treasury bills are less than 2 percent of the Treasury securities in the portfolio. Thus, the exit plan must contemplate a significant restructuring of the balance sheet in terms of its composition and average maturity.

Fourth, my preferred operating environment would make explicit the Fed's commitment to a numerical inflation objective, a proposal I have made many times.<sup>6</sup> Numerical inflation objectives are fairly common among major central banks around the world and many academics and students of central banking regard adopting such an objective as

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<sup>4</sup> Other central banks implementing a corridor or channel system include the Bank of Canada, Bank of England, Bank of Japan, European Central Bank, Norges Bank, Reserve Bank of Australia, Reserve Bank of New Zealand, and the Swedish Riksbank. In the recent financial crisis, the ECB, Bank of Japan, Bank of England, Bank of Canada, and Norges Bank have moved to floor systems due to the expansion of their balance sheets. See Berentsen and Monnet (2008), Kahn (2010), and Antoine and Monnet (2011).

<sup>5</sup> See Plosser (2010a).

<sup>6</sup> See Plosser (2009a), (2009b), (2008).

best practice.<sup>7</sup> I believe it is time for the Federal Reserve to adopt this best practice and clearly announce a numerical inflation objective in support of our dual mandate. This would be particularly valuable as we exit our accommodative stance. Since our large balance sheet poses significant risks for inflation down the road, an explicit commitment to a low and stable inflation rate would help reassure the public that we will exit in a way that is consistent with that goal. This would also help keep expectations of inflation well anchored.

To summarize, my preferred operating environment would re-establish the federal funds rate as the primary instrument of monetary policy; shrink the balance sheet and reserves to levels that make the federal funds rate an effective policy tool; and restructure the balance sheet in terms of its composition and maturity structure. Adopting an explicit inflation objective would contribute to the effectiveness of policy and the policy framework and any plan for normalization.

### **A Proposed Exit Plan**

Now that I have described where I think our policy framework should be, the next step is to lay out an exit plan that takes us there. As I argued at the outset, it is important to have a plan. The plan must be communicated to the public and markets in a way that reduces uncertainty, and it should explain how decisions will depend on economic conditions, just like other monetary policy decisions.

Economists have recognized that any exit plan will use several policy tools, including raising interest rates and shrinking the balance sheet. Some would start with raising interest rates; some would begin by shrinking the balance sheet; others would do both.

My proposed strategy involves raising rates and shrinking the balance sheet concurrently and tying the pace of asset sales to the pace and size of interest rate increases.<sup>8</sup>

The first element of the plan to exit and normalize policy would be to move away from the zero bound and stop the reinvesting program and allow securities to run off as they mature. Thus, we would raise the interest paid on reserves from 25 basis points to 50

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<sup>7</sup> Inflation targets have been adopted by numerous economic regimes, including Australia, England, Brazil, Canada, Chile, the Czech Republic, the European Central Bank, Hungary, Indonesia, Israel, Korea, Mexico, New Zealand, Norway, the Philippines, Poland, South Africa, Sweden, and Thailand. See Dotsey (2006).

<sup>8</sup> Taylor (2010) also suggests linking sales to interest rate decisions.

basis points and seek to achieve a funds rate of 50 basis points rather than the current range of 0 to 25 basis points.<sup>9</sup> We would also announce that between each FOMC meeting, in addition to allowing assets to run off as they mature or are prepaid, we would sell an additional specified amount of assets. These “continuous sales,” plus the natural run-off, imply that the balance sheet, and thus reserves, would gradually shrink between each FOMC meeting on an ongoing basis.

The second element of the plan would be to announce that at each subsequent meeting the FOMC will, as usual, evaluate incoming data to determine if the interest rate on reserves and the funds rate should rise or not. Monetary policy should be conditional on the state of the economy and the outlook. If the funds rate and interest on excess reserves do not change, the balance sheet would continue to shrink slowly due to run-off and the continuous sales. On the other hand, if the FOMC decides to raise rates by 25 basis points, it would automatically trigger additional asset sales of a specified amount during the intermeeting period. This approach makes the pace of asset sales conditional on the state of the economy, just as the Fed’s interest rate decisions are. If it were necessary to raise the interest rate target more, say, by 50 basis points, because the economy was improving faster and inflation expectations were rising, then the pace of conditional sales would also be doubled during the intermeeting period.<sup>10</sup>

The third element of the exit plan must address the composition of the Fed’s portfolio. If we are to return to an all-Treasuries portfolio, then asset sales, particularly in the early part of the program, must be concentrated in MBS.

### **Examples of the Exit Strategy**

What are the consequences of this strategy? In order to make the proposal concrete, first, let’s assume that excess reserves need to shrink by about \$1.4 to \$1.5 trillion in order to permit the federal funds rate to be reliably above the interest rate paid on reserves. Second, let’s assume that once asset purchases end and the practice of reinvesting proceeds from maturing or prepaid assets stops, the balance sheet will begin to contract by about \$20 billion a month, or by about \$30 billion between FOMC meetings, which occur about every six weeks. This will vary somewhat over time and

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<sup>9</sup> This may be difficult to achieve in the short term due to technical challenges, but we would learn about the challenges of hitting a target under a floor system.

<sup>10</sup> This assumes a linear relationship between the size of the policy rate increase and the volume of sales. We could consider a nonlinear relationship, whereby doubling the size of the rate increase would entail less than a doubling in the volume of sales, but a drawback would be that we would not regain control over the funds rate target as an independent policy instrument until interest rates were at a higher level.

with the level of interest rates, but that will make little difference in the overall thrust of the plan. Third, let's consider continuous sales of \$20 billion in assets between each FOMC meeting. This pace of continuous sales plus the natural run-off imply that the balance sheet, and thus reserves, would shrink by about \$50 billion between each FOMC meeting on an ongoing basis.

To illustrate my proposed exit strategy, I want to consider two examples.<sup>11</sup> In the first example, assume after the initial rise to 50 basis points, the path of policy involved raising the interest rate by 25 basis points at each of the next eight meetings over the following year, and suppose the pace of conditional sales was \$125 billion. That is, for each 25 basis point increase in the funds rate, we would sell an additional \$125 billion of assets. I note that this pace of conditional sales, combined with the continuous sales and run-off, is similar to the pace at which the Fed bought securities as the balance sheet expanded.

Then the funds rate and the interest rate on reserves would rise to 2.5 percent and the balance sheet would shrink by \$1.45 trillion by the end of a year, or eight FOMC meetings. Monetary policy would still be accommodative, but the operating framework would be normalized. We would have shrunk the amount of excess reserves in the banking system so that the funds rate could once again be the policy instrument and the balance sheet would no longer be an issue for policy.

In the second example, let's suppose we wanted to normalize policy in 18 months rather than a year. That would mean normalizing over twelve FOMC meetings rather than eight. This would require conditional sales of only \$67 billion between meetings, but it would also mean that the funds rate would become a viable instrument at 3.5 percent rather than 2.5 percent.<sup>12</sup> These two examples illustrate how the pace of sales and the time it takes to normalize policy involve trade-offs that must be faced.

## **Discussion**

I recognize that any strategy has its disadvantages and this one, no doubt, will attract its share of critics. Some will say that we cannot shrink the balance sheet this rapidly without disrupting markets. Yet the pace of sales in the first example is likely to be no more rapid than the pace of asset purchases during the crisis, and in a growing

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<sup>11</sup> See the Table.

<sup>12</sup> See the Table.

economy, the demand for duration and risk is likely to be increasing and this will mitigate any potential for disruption.

Moreover, many advocates of the asset purchase programs have argued that these programs mainly influenced long-term rates by changing the amount of these assets in the hands of the public – the so-called stock effect – and not through the flow or pace of purchases. This is why announcing the total amount of purchases up-front was an important part of the asset purchase programs.

According to this stock view, once the markets understand that the FOMC has begun to normalize policy and that the Fed is shrinking its portfolio and the volume of excess reserves, then the stock effect will largely be incorporated into long rates and the pace of sales will have only marginal effects. Thus, whether it is through expected higher short-term rates or through the sale of longer-term securities, long rates will and should rise during the tightening cycle.

My own view is that except for the period when markets were severely impaired, early in the crisis, the asset purchase programs had, at best, marginal effects on asset returns and economic activity. Given that market functioning has returned to normal, I believe asset sales are unlikely to have a significant impact as market participants' demand for risk and duration rise.

Others have suggested that we simply rely on raising interest rates and allowing the balance sheet to decline only slowly over time through the natural run-off of maturing securities. In my view, this alternative has several drawbacks. No one knows how fast the Fed might have to raise rates to restrain the huge volume of excess reserves from flowing out of the banking system. Rates might have to rise very quickly and in larger increments than otherwise to offset the accommodative impact of the large balance sheet. This could prove quite disruptive, yet failing to do so could risk much higher inflation levels. It also means that it would take about five years before the funds rate would become a feasible operating instrument. This approach also fails to address the problem of the composition of the balance sheet, since, at the end of the process, the SOMA portfolio would still remain heavily invested in mortgage-backed securities. Another drawback of this alternative is that while the Fed's interest rate decisions would be contingent on the state of the economy, decisions regarding the size and composition of the balance sheet would not be.

Another, perhaps somewhat more appealing approach is to shrink the balance sheet first through the sale of assets. This might be thought of as the LIFO model – last in first out. The asset purchases came after the policy rate reached the effective zero bound, so some argue that assets should be sold first before raising the policy rates from the zero bound. I think this is a somewhat risky strategy, because if the pace of sales is not sufficiently aggressive, the policy rate may fall far behind the curve to stave off higher inflation.

For these reasons, the approach that I have outlined involves concurrent policy rate increases and asset sales whose pace depends on the state of the economy. Of course, as my examples illustrate, this approach can be modified by changing the numbers. You could make the balance sheet shrink faster or slower and affect the timing of when normalization is achieved, or you could increase the pace of continuous sales and make the conditional sales smaller. But whatever pace we decide on, I believe it is important that we articulate a systematic approach to normalizing monetary policy. We must have a plan that we can communicate to the markets that indicates where we are headed and how we anticipate getting there.

### **Closing Thoughts**

In summary, I believe that my proposed exit strategy has several advantages. It can get us back to a “normal” operating environment in a timely manner. It shrinks excess reserves sufficiently in a timely manner after the process begins so that the federal funds rate can once again be the primary policy instrument. It is a plan that can be easily communicated in a way that the markets and the public can understand. By tying sales to interest rate decisions, it allows the process for selling assets to be conditional on economic outcomes in ways that are familiar to market participants. This should provide a degree of comfort to the markets and reduce uncertainty about the path of sales.

I believe that the challenges the FOMC faces as it exits from the period of extraordinary accommodation and nontraditional policies can be reduced if we communicate a systematic plan that describes where we are headed and how we will get there. Such a plan would be strengthened if the FOMC adopted an explicit numerical objective for inflation. Doing so will help ensure that inflation expectations remain well anchored, thereby reducing the risks of undesirable inflation outcomes as we choreograph a graceful exit.

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**Table 1**  
**Exit Strategy Example 1: Normalization in 12 Months**

	FOMC MEETING									
	0	1	2	3	4	5	6	7	8	9
<b>Funds Rate/IOR</b>	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.50
<b>Change in Funds Rate/IOR</b>	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0
<b>Beginning of Period Total Reserves (\$ bil.)</b>	\$1,500	\$1,450	\$1,275	\$1,100	\$925	\$750	\$575	\$400	\$225	\$50
<b>Asset Run-off (\$ bil.)</b>	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$0
<b>Continuing Asset Sales (\$ bil.)</b>	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$0
<b>Conditional Asset Sales (\$ bil.)</b>	\$0	\$125	\$125	\$125	\$125	\$125	\$125	\$125	\$125	\$0

**Exit Strategy Example 2: Normalization in 18 Months**

	FOMC MEETING													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Funds Rate/IOR</b>	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.50	2.75	3.00	3.25	3.50
<b>Change in Funds Rate/IOR</b>	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0
<b>Beginning of Period Total Reserves (\$ bil.)</b>	\$1,500	\$1,450	\$1,333	\$1,216	\$1,099	\$982	\$865	\$748	\$631	\$514	\$397	\$280	\$163	\$46
<b>Asset Run-off (\$ bil.)</b>	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$30	\$0
<b>Continuing Asset Sales (\$ bil.)</b>	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$0
<b>Conditional Asset Sales (\$ bil.)</b>	\$0	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$67	\$0