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Potential Monetary Policy Tools to Provide Additional Accommodation

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If the recent economic weakness were to persist or worsen, or if the risk of deflation were to reemerge, Federal Reserve policymakers might choose to provide additional policy stimulus. Drawing on new and previous staff work, this note summarizes an array of tools that could help boost real activity and check deflationary pressures. We assume that policymakers would want to act quickly in such circumstances, so we do not consider actions that would be feasible only with new legal authority. We do not discuss the possibility of reducing the interest rate on excess reserves, which is treated in a companion memo.¹

1. Tools for shifting market expectations about the future path of short-term rates.

- a. The Committee could *make its forward guidance more explicit* in order to push out the dates on which market participants expect the FOMC to begin policy firming, or at least to reduce the perceived probability of an early inception of policy tightening. To do so, the Committee could state a date before which it does not expect to raise rates or shrink its portfolio, perhaps with an escape clause for unexpectedly high inflation. Alternatively, the Committee could provide a more specific description of the economic conditions that would trigger an end to reinvestment and a rate hike. Policymakers also could convey their current thinking about the likely pace of subsequent tightening and the manner in which their future decisions will be influenced by the evolving economic outlook.

More-explicit forward guidance would seem likely to result in lower term interest rates and thus in more accommodative financial conditions if the central bank makes clear that it expects to begin removing policy accommodation later than currently anticipated by market participants, or that policymakers see the appropriate trajectory for the policy rate once tightening begins as likely to be shallower than the path projected by investors. Even if investors' modal rate forecasts are essentially the same as those of policymakers, more specific forward guidance might bring down medium-term interest rates by reducing the odds investors place on an early increase in the policy rate.

As of August 2, futures quotes, combined with the staff's standard assumption about term premiums, currently suggest that the expected federal funds rate first moves above 25 basis points in the summer of 2013 and rises to 50 basis points late 2013. But prices for interest rate caps suggest that the modal value remains below 25 basis points through the end of 2013. In contrast, the latest Blue Chip Financial survey (published August 1) points to an earlier liftoff and a steeper climb. Indeed, about two-thirds of respondents expected the funds rate to be at or above 50 basis points in the third quarter of 2012, and the consensus forecast for the fourth quarter was 1.1 percent.² If Committee members anticipate that the

¹ "Reducing the IOER Rate" (by S. Carpenter, J. Ihrig, D. Leonard, and P. McCabe), August 2011.

² The Blue Chip Financial forecasts exhibit considerable dispersion, suggesting a wide range of views about the likely date of the first rate hike and about the pace of subsequent moves; for example, the projections for the funds rate in the fourth quarter of 2012 have a central tendency (excluding the highest and lowest deciles) that stretches from 0.2 to 2.0 percent.

funds rate is quite likely to follow a shallower trajectory than suggested by the expected path that is priced into markets or by the Blue Chip consensus, then the FOMC might wish to modify its forward guidance to provide greater clarity about its policy outlook, thereby helping bring investors' expectations into closer alignment with the Committee's view.

One approach along these lines is to be more explicit about policymakers' conditional expectation of the likely time of policy liftoff.³ For example, the Committee could change the forward guidance in its statements to read: "*Given the current outlook for economic activity and inflation, the Committee does not expect to raise its target for the federal funds rate before the end of 2013.*" If the Committee's expectations about the economic outlook and thus the likely timing of policy liftoff changed, its forward guidance would then need to be adjusted.⁴ For instance, if the economy failed to strengthen as expected, or if inflation settled in at a lower level than had been anticipated by the Committee, members might want to extend the anticipated date of liftoff in order to avoid the increase in intermediate- and longer-term rates that otherwise would be likely to occur as the date approaches. But if economic activity and inflation were to evolve about as expected, no change in guidance would be necessary as the stated date nears.

Alternatively, the Committee could choose to quantify, in its statement, the thresholds that would determine the timing of policy liftoff.⁵ For example, the Committee might announce its intention to keep the funds rate near zero as long the unemployment rate remains above 7½ percent, unless core PCE inflation measured on a 12-month basis were to rise above 2½ percent. Or the Committee could frame thresholds in terms of real GDP growth and headline inflation, or in terms of nominal GDP. Formulating quantitative thresholds might be challenging, given that participants have a diversity of views about the operation of the economy and the monetary policy transmission mechanism, as well as a range of assessments regarding the longer-run sustainable rate of unemployment and the mandate-consistent inflation rate. Nonetheless, to the extent that more precise forward guidance is judged to be desirable, policymakers may prefer to quantify the relevant set of economic conditions rather than specify the likely timing in terms of calendar dates.

Though more explicit forward guidance might currently result in more accommodative financial conditions, policymakers may worry that economic agents would see such

³ Inasmuch as the Committee's anticipated exit strategy, spelled out in the Minutes of its June 2011 meeting, indicated that the FOMC expects to stop reinvesting principal received from maturing securities and begin using temporary reserve draining tools before raising its target for the federal funds rate, the Committee might want to provide forward guidance not only about its policy rate but also about its asset management policy.

⁴ The Bank of Canada first adopted an explicit approach to communicating its policy expectations in April 2009, when it stated: "*Conditional on the outlook for inflation, the target rate can be expected to remain at its current level until the end of the second quarter of 2010 in order to achieve the inflation target.*" The Bank reiterated that policy outlook until spring 2010, when it dropped the forward guidance; it raised its policy rate in June. Also in April 2009, the Reserve Bank of New Zealand stated that it expected that its policy rate "*should stay at or below the current level through the latter part of 2010.*" Ayers and Wilson (2009), and Bowman (2009) discuss these commitments in greater detail.

⁵ This approach would be reminiscent of the Bank of Japan's March 2001 indication that it intended to maintain the zero interest rate policy (ZIRP) until the Japanese CPI (excluding perishables) stabilized or increased on a year-over-year basis.

guidance as an unconditional promise even though the Committee intends it as a conditional forecast that would change as the economic outlook evolves. If so, members might be concerned that future changes in the forward guidance could result in an undesirably large adjustment in asset prices and damage the Committee's credibility.

A complementary approach would be to augment the Survey of Economic Projections.⁶ For example, participants could provide information about the paths for the federal funds rate that they see as likely to be appropriate for achieving the dual mandate, and the SEP would report the central tendency and range of those projections. By conveying the diversity of views about the likely path of policy, this approach could make it less likely economic agents would see such information as representing an unconditional promise.

- b. The Committee could *undertake financial transactions to reinforce its forward guidance* in order to raise investors' assessments of the probability that short-term rates will remain extraordinarily low over a given time horizon.⁷ For example, the Federal Reserve could auction options to primary dealers that would give the holders the right to engage in term RPs with the Desk at a specified rate (say, 25 basis points) as long as the conditions specified in the Committee's forward guidance continued to prevail.

The Committee's willingness to take such an extraordinary step might be taken as a signal that it is strongly committed to the forward guidance. Such a signal could substantially reduce investors' uncertainty about the funds rate trajectory, leading to an appreciable drop in term premiums in money markets. The Federal Reserve might, however, need to sell a large volume of options to have an appreciable effect on investors' views. If so, and if the Committee later found it appropriate to begin raising the federal funds rate before the stated conditions had been met, the Desk might have to sell a large quantity of assets out of the SOMA portfolio (or take other steps such as executing large quantities of reverse RPs or auctioning a large amount of term deposits) to mop up the new reserve balances that would be created as the options were exercised. In that situation, the Federal Reserve could incur losses or reduced income as a result of having sold the options. However, policymakers might judge the income and balance sheet risks of such a program to be fairly modest as long as they see only a relatively low probability of circumstances that would warrant deviating from their forward guidance.

Of course, the terms of an options contract that embeds a precise set of triggers would be substantially less flexible than the forms of forward guidance discussed above. Moreover, it may be infeasible to design an option that fully reflects all conceivable state-contingent policy actions. Thus, even if the options contracts are broadly consistent with the forward guidance, substantial losses could still be incurred under certain contingencies that may be difficult to anticipate.

⁶ The communications subcommittee is exploring various possible enhancements to the SEP.

⁷ In August of 1999, the Committee authorized the Desk to sell, to the primary dealers, "Y2K options" that gave the dealers the right to enter into an overnight RP with the Desk during the last week in 1999 and the first two weeks in 2000. The strike price for these options (that is, the rate at which the dealer could enter into an RP) was 150 basis points above the target federal funds rate. Dealers bought, at auction, almost \$500 billion dollars (notional value) of such options. None were exercised.

2. *Asset Purchases or Exchanges.*

- a. The Committee could ***purchase additional securities***. The Committee could direct the Desk to buy a further sizable amount of longer-term Treasury debt – perhaps a smaller amount than during the Federal Reserve’s second round of asset purchases (henceforth, LSAP2) but concentrating more heavily on the longer end of the maturity spectrum. Whether policymakers see such purchases as desirable would depend on their views about the benefits and costs of LSAP2 as well as their understanding of the mechanisms through which such asset purchases affect economic outcomes.

Alternatively, the FOMC could direct the Desk to purchase securities that are more directly linked to sectors of the economy that are unusually weak or that may still face significant credit constraints: Possibilities include agency debt and RMBS, agency CMBS, SBA securities, and short-term municipal paper. While the Desk could purchase sizable quantities of agency debt and RMBS, the total amount of agency CMBS, SBA securities, and short-term municipal debt outstanding is only about \$350 billion. Moreover, such purchases might be seen as inappropriately steering credit toward particular sectors.

- b. The Committee could ***extend the duration of the SOMA portfolio without changing its size*** by selling some or all of the debt securities now held in the SOMA that have a fairly short remaining time to maturity and buying assets with a long time to maturity, thus reducing the average duration of the public’s holdings of Treasury securities.⁸

Staff at the Board and FRBNY have undertaken a preliminary analysis of an illustrative “maturity exchange” under which the Desk would sell \$400 billion of the \$600 billion (at face value) of debt securities in the SOMA portfolio that have remaining maturities of 3 years or less and buy an equal face value of Treasury securities with remaining maturities of 8 years or more (while continuing to reinvest principal from MBS and maturing debt securities in longer-term Treasuries, as now).⁹ By comparison, LSAP2 involved the outright purchase of \$600 billion of Treasury securities, with the bulk of purchases spread across maturities between 2 and 10 years. The illustrative program would increase the average duration of the SOMA debt portfolio by 2.4 years (from 4.85 to 7.25 years) and

⁸ Such a program would be broadly similar to Operation Twist conducted in the early 1960s. Swanson (2011) discusses and analyzes Operation Twist.

⁹ The Desk estimates that such a program could be undertaken without causing sizable disruptions in market functioning if it were spread over a period of six months or so. Although this illustrative program would leave the reported value of the SOMA securities portfolio unchanged, it likely would not be neutral with respect to the quantity of reserve balances. Given the current level of market rates relative to the coupon rates on outstanding Treasury debt, securities with a remaining maturity of eight years or more tend to trade in the market at a larger premium to face value than do securities with a short remaining maturity. Thus, although the Desk would buy and sell the same face value of securities, it would pay larger premiums on the securities it would buy than it would receive on the securities it would sell. Reserve balances would increase by an amount equal to the difference in the premiums on securities bought over the premiums on the securities sold. Of course, the Committee could instruct the Desk to sell short-duration securities and buy long-duration securities that have the same market value. That approach would mark a departure from the Committee’s previous practice.

reduce the average duration of publicly held Treasury debt by about 0.6 year (from 3.8 to 3.2 years). In contrast, the LSAP2 purchases had a much smaller effect on the average duration of publicly held Treasury debt, reducing it by 0.1 year. Looking instead at 10-year equivalent values, LSAP2 (including reinvestment) reduced the 10-year equivalent value of publicly held Treasury debt by about \$450 billion relative to what it would have been otherwise. The illustrative maturity-exchange program would, all else constant, reduce the 10-year equivalent value of the publicly held debt by roughly \$560 billion.

Models recently developed by Board staff suggest that the illustrative maturity-exchange program would, all else equal, reduce the 10-year Treasury yield by 20 to 50 basis points, and that LSAP2 had roughly the same effect.¹⁰ Of course, these estimates are subject to considerable uncertainty, not only about estimated parameters but also about model specification. The models assume that asset purchase programs reduce term premiums by taking duration out of the market and/or reducing the amount of debt held by the public. For example, these models would suggest identical effects on longer-term yields if the Desk were to purchase a given quantity of 5-year Treasury securities or a much smaller quantity of 30-year Treasury securities; the second action's larger impact on the average duration of the public's holdings of Treasuries would compensate for its smaller size. If, however, asset purchase programs work primarily through preferred habitat channels, then it might be most effective to purchase securities with maturities no longer than 10 years, because yields at those maturities are most relevant for the spending decisions of households and firms.

Clearly the illustrative maturity-exchange program discussed here is just one of many possible approaches to extending the duration of the SOMA securities portfolio (and thus reducing the duration of the publicly held debt) without expanding the size of that portfolio. Staff continue to analyze such programs.

- c. The Committee could *buy the fixed-rate side of interest rate swaps*. Swap transactions would remove duration from the market but would not increase bank reserves. Buying swaps would put downward pressure on longer-term rates as the Federal Reserve's counterparties sought to hedge their risk on the swap transactions by purchasing longer-term, fixed-rate debt. Although the Federal Reserve Act does not grant explicit legal authority to conduct such transactions with private-sector counterparties, that authority might be implicit in the Act's "incidental powers" provision.¹¹

While reserve-neutral, the swaps would still expose the Federal Reserve to interest rate risk. Moreover, as swaps would affect market rates through the hedging transactions they would induce our counterparties to undertake, large scale swap operations would still carry the potential for disrupting liquidity conditions in the longer-term Treasury market.

¹⁰ The staff's original estimate of the effect of LSAP2 (an estimate based on models that cannot be used to assess the effects of a maturity exchange program) was that it would reduce 10-year yields by roughly 20 basis points relative to what they would have been without LSAP2; see S. D'Amico, W. English, D. Lopez-Salido, and E. Nelson (2011). In a recent study, Krishnamurthy and Vissing-Jorgensen (2011) conclude that the Federal Reserve's second round of asset purchases did reduce longer-term yields by about 20 basis points.

¹¹ Further legal analysis would be required before a program of this type could be initiated.

- d. The Committee could *target or cap medium- and longer-term yields* by committing to buy longer-term Treasuries at yields only modestly above current yields, or even at rates below current yields, for some period of time. Bowman, Erceg, and Leahy (2010) outline three different approaches that such a strategy could take: (1) targeting near zero rates for all maturities up to the point at which the FOMC believes it is likely to wish to raise short-term rates, (2) taking an incremental approach of targeting near-zero rates further and further out the yield curve until the desired policy goals are met, (3) targeting a long-term rate, perhaps at a rate above zero.

There is a historical precedent for the third approach. Between early 1942 and 1951, the Federal Reserve and the Treasury agreed that interest rates should be kept low. In this period the Federal Reserve capped yields on long-term Treasury bonds at 2½ percent and, until 1947, pegged the yield on short-term Treasury bills at 3/8 percent. Because the cap on long-term yields was not binding during most of the period, it played a minor role. However, the cap on long rates was binding from mid-1947 through late 1948. The Federal Reserve managed to maintain the cap by purchasing large amounts of longer-term Treasury securities, though not the entire stock, while also maintaining the peg on short-term rates. Control of long-term Treasury rates was maintained without decoupling long-term Treasury rates from long-term rates faced by private parties. This episode has sometimes been cited as evidence that the Federal Reserve can not only target short rates, but also long-term interest rates. However, to do so, the Federal Reserve had to give up control over the size of its balance sheet.

3. Efforts to spur lending by banks and other financial intermediaries.

Depository institutions generally appear to have no shortage of funding, so merely providing additional liquidity to the banking system would be unlikely to spur lending. To have an effect, the Federal Reserve likely would have to subsidize lending either by funding banks at below-market rates (perhaps for loans to particular sectors) or by taking on, explicitly or implicitly, at least part of the credit risk associated with bank loans. Credit-easing programs could be aimed at reducing the rates paid by, and increasing the flow of credit to, classes of borrowers that policymakers see as facing unnecessarily stringent credit conditions.

For example, the Federal Reserve could offer term funding through the discount window to banks against specific types of collateral (for example, newly originated small business loans, newly originated mortgage loans, or newly modified mortgage loans) at rates lower than banks' current cost of funding such loans. Moreover, the Federal Reserve could take on some or all of the credit risk for such loans by making nonrecourse discount window loans against some types of collateral while imposing limited haircuts. However, such actions might be seen as inappropriately steering credit toward particular sectors, and it very likely would generate significant adverse political reactions.

Bibliography

K. Ayers and B. A. Wilson (2009), "Recent Central Bank Announcements Regarding Intended Policy Rate Paths," memo to the FOMC, June 2009

D. Bowman (2009), "Assessing the Market Impacts of Recent Announcements by the Bank of Canada, Riksbank, and Reserve Bank of New Zealand," memo to the FOMC, June 2009

S. D'Amico, W. English, D. Lopez-Salido, and E. Nelson (2011), "The Federal Reserve's Large-Scale Asset Purchases: Rationale and Effects," manuscript, Federal Reserve Board, June.

A. Krishnamurthy and A. Vissing-Jorgensen (2011), "The Effects of Quantitative Easing on Interest Rates," forthcoming in *Brookings Papers on Economic Activity*.

E. Swanson (2011), "Let's Twist Again: A High-Frequency Event-Study Analysis of Operation Twist and Its Implications for QE2," forthcoming in *Brookings Papers on Economic Activity*.