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Reserve Management Tools to Target a Higher Policy Rate

Staff of the Board of Governors of the Federal Reserve System and of the Federal Reserve Bank of New York[1]

Summary

In this memo we identify several operating tools that might be used to improve the Desk's ability to maintain the federal funds rate and other overnight bank funding rates around the FOMC's target rate, even if the Federal Reserve's balance sheet is still historically large. In broadest terms, the tools can be classified into two basic groups—those focused primarily on shaping or strengthening the demand for reserves and those designed to afford the Desk greater control over the supply of reserves.

The remainder of the memo is organized as follows. Section 2 below reviews the experience with the interest on excess reserves (IOER) framework to date. Section 3 discusses various policy actions that might boost the demand for reserves. Section 4 lists a number of tools that could be deployed to reduce the supply of reserves. Section 5 concludes with some discussion of the relative merits of these approaches and how they might be used in combination in the near term to improve control over short-term interest rates in the implementation of monetary policy.

Experience with IOER[2]

Under the operating framework adopted last autumn, the Federal Reserve established a rate of interest on excess reserves (and set the primary credit facility (PCF) rate a suitable distance above that level). This framework was adopted specifically for an environment in which excess reserve levels were expected to be high and volatile, with no expectation that the Desk would attempt to manage the level of reserve supply through open market operations.[3] This framework relies heavily on arbitrage to prevent the fed funds rate and other short-term rates from falling far below the rate paid on excess reserves when reserve supply is well above any level associated with requirements or working balances. To be sure, banks that would otherwise earn the IOER rate might not

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[2] Much of this section draws on "Effectiveness of the Interest on Excess Reserves Operating Framework and of Options to Reduce Excess Reserves," memorandum prepared by Staff, June 12, 2009. This note also presents some of the demand side measures discussed below, and reviews ways in which methods to reduce levels of excess reserves might influence the federal funds rate and other market rates.

[3] The Desk did arrange a small amount of reverse RPs at the time, and a substantial amount of reserves was drained through use of the Treasury's Supplementary Financing Program, but absolute levels of excess reserves remained high.

have an incentive to lend reserves at any rate below this level. However, banks borrow significant amounts in short-term funding markets from other institutions that do not have this option. In the arbitrage trade necessary to prevent short-term market rates from falling much below the interest rate paid on excess reserve balances, banks must be willing to purchase overnight funds at interest rates below the rate paid on excess reserves, potentially in significant volume, for the purpose of earning the spread between the rate paid on excess reserves and the rate at which they purchased the funds. If a sufficient number of banks are willing to engage in this type of arbitrage, competition among them should work to narrow that spread to low levels.

Events in October and November 2008 were clearly at odds with the view that competition among banks engaged in this arbitrage would necessarily prevent market rates from falling much below the rate of interest paid on excess reserves. Over much of this two-month period, when the IOER rate was well above its current level of 25 basis points, the effective funds rate was persistently well below the rate paid on excess balances. Perhaps most obviously because their overnight lending activity accounts for a large portion of the trading volume captured in the calculation of the effective federal funds rate, Fannie Mae and Freddie Mac—which earn no interest on any balances they hold at the Federal Reserve—typically received rates well below the IOER rate on their overnight lending to banks. But other nonbank institutions that typically lend to banks on a short-term basis in other wholesale funding markets, such as the Eurodollar market, earned similarly low returns. Short-term rates in other financing markets not dominated by banking institutions, such as those for repurchase agreements, were also similarly low.

A number of plausible reasons have been cited for the absence of arbitrage activity, at least some of which are likely to have reflected temporary conditions. The fall of 2008 was a period of considerable strain in the banking system, and amidst the financial turmoil traders were likely reluctant to take actions, such as borrowing large amounts in the federal funds market, that could potentially be misinterpreted by market participants or even by senior management of their own bank. Balance sheet constraints (capital and leverage ratios) may have restrained banks' willingness to buy funds at rates below the IOER rate to capture the spread between the borrowing rate and the IOER rate. Banks that were well positioned to take advantage of the arbitrage opportunity may have needed to develop new counterparty relationships and credit lines, which takes time. Similarly, sellers of funds may have been reluctant to add counterparties, trading off some additional earnings through enhanced competition for their funds for more security in their evaluation of counterparty risk. Banks may also have been reluctant to disrupt existing trading relationships for an arbitrage opportunity that was seen as likely to be short-lived.

It is possible and perhaps even probable that the forces of arbitrage will be stronger in the future than has been the case over recent months. The circumstances in which the Federal Reserve will likely be contemplate policy tightening would presumably be ones in which the outlook for the economy and the state of the financial sector had improved. In that case, many of the factors that may have served to widen the spread between the IOER rate and overnight bank funding rates last fall will likely be diminished. If so,

raising the IOER rate by itself could influence overnight bank funding rates to the desired degree, even with high levels of excess reserves. That said, the economic recovery could be weak and protracted, and banks may remain quite cautious in their borrowing and lending activities for some time, in ways that, perhaps in combination with other factors, could still leave a wide gap between the IOER rate and overnight bank funding rates so long as excess reserves were still quite elevated. For such an eventuality, it might be useful for the Federal Reserve to consider steps that could bolster the demand for reserves or reduce the quantity of reserves in order to enhance its ability to adequately control short-term interest rates.

Demand Side Measures[4]

On the demand side, there are several steps apart from raising the IOER rate that could be implemented to bolster the demand for reserves including pursuit of legislation to allow payment of interest on balances for all account holders, possibly other measures aimed at improving the forces of arbitrage in the funds market, or implementing a system of expanded voluntary reserve targets. One advantage of options to boost the demand for reserves (as opposed to measures reducing supply) is that the benefits of having high excess reserve levels on Fedwire payment flows and decreased daylight overdrafts experienced in recent months could be preserved.

a. *Payment of Interest on Balances Held by All Accountholders*: The upward pressure on the funds rate from an increase in the IOER rate could be amplified if the Federal Reserve could obtain the statutory authority to pay interest on balances held by all accountholders. In particular, payment of interest on balances held by the GSEs should remove the incentive that these institutions currently have to sell funds at rates below the IOER rate. Indeed, the payment of interest on their balances might well reinforce the arbitrage described above to the extent that the GSEs themselves would borrow to increase the level of their reserve holdings to capture any spread of the IOER rate over the funds rate. The authority to pay interest on GSE balances, however, would require legislative action, and thus it is not at all clear that it could be implemented quickly.[5] Moreover, it is uncertain what impact paying interest on the balances held by the GSEs would have on rates in other short-term funding markets, such as Eurodollar and general collateral RP markets, where lenders do not have the option of earning the IOER rate on their excess cash positions.

b. *Strengthening Arbitrage*: There may be other steps that the Federal Reserve could take to strengthen the forces of arbitrage. For example, the Federal Reserve could

[4] Several of these ideas are being examined by staff for their feasibility and requirements for operational readiness.

[5] An alternative proposal might be to offer an investment service for accountholders such as GSEs for which the Federal Reserve acts as fiscal agent. The investment service would offer overnight reverse RPs at or slightly below the target rate with select counterparties. In effect, this type of mechanism would provide GSEs with implicit interest on their account balance maintained at the Fed. This type of arrangement would require additional legal analysis.

facilitate development of a collateralized form of overnight bank borrowing, which could address reluctance of some lenders to broaden their set of trading counterparties. A borrowing bank obtaining reserves from, say, a federal funds counterparty could, by mutual agreement, segregate those reserves in a separate account that would collateralize the loan. Under such a collateralized arrangement, a GSE, or other potential lenders, should have no concerns about lending significant amounts to any counterparty. Such a proposal would need further legal and operational analysis. Of course, the potential leverage ratio limitations on the borrower/arbitrageur under the preceding proposal would still be an issue. And banks' concerns about the impact on their leverage ratios relative to regulatory guidelines is suspected of having been a contributing factor to a lack of arbitrage in the bank funding markets last autumn. The Federal Reserve could pursue several options to directly alleviate this possible constraint.[6]

c. *Voluntary Reserve Targets:* In April 2008, the staff provided to the FOMC an analysis of a variety of possible frameworks for monetary policy implementation using authority to pay interest on reserves. One option involved a system of "voluntary reserve targets," in which banks could earn a higher rate of interest on balances they accumulated to satisfy a commitment, arranged previously, to hold a specified level of balances over a specified period. In many ways, such a program would be similar to the existing required clearing balance program, but offering payment in the form of explicit interest and potentially allowing for substantial reserve target sizes. There are uncertainties about the rate that would be needed to induce banks to establish voluntary targets of sufficient size. In this sort of arrangement, the rate paid on these reserve targets would need to be set enough above the IOER rate to provide sufficient inducement. Indeed, should banks establish voluntary targets that eliminate most, or at least a significant portion, of their excess holdings, then market rates might actually gravitate more towards the rate paid on balances held to meet these voluntary reserve targets rather than towards the IOER rate.[7] Operational capability to support such an arrangement is not currently scheduled to be completed until mid-2010.

d. *Increases in Reserve Requirements*: Another means of reducing excess reserves with high levels of reserve balances would be to increase required reserve ratios within the currently existing framework of reserve requirements. The Federal Reserve Act specifies maximum reserve requirement ratios for transaction deposits and for nonpersonal time deposits and Eurocurrency liabilities of 14 percent and 9 percent, respectively. Currently, beyond the low reserve tranche, the marginal reserve requirement ratio for net transaction accounts is set at 10 percent; the reserve

[6] Several such options are presented and discussed in "Possible Effects of Very High Reserve Balances on Bank Balance Sheets," memorandum to the Federal Open Market Committee, June 12, 2009.

[7] In effect, the alignment of the primary credit rate, the IOER rate, the rate paid on the voluntary reserve targets, and market rates might resemble more a classic interest rate corridor arrangement. In this arrangement, the level of the IOER rate itself becomes of secondary importance in determining market rates.

requirement ratio for nonpersonal time deposits and net Eurocurrency liabilities has been set at 0 percent since the early 1990s. Increasing reserve requirement ratios for these two deposit categories from their current 10 percent and 0 percent settings to the 14 percent and 9 percent statutory maximums would generate a significant increase in required reserves; some estimates suggest that required reserves could increase by perhaps $400 billion. Of course, banks could be expected to respond to an increase in reserve ratios along these lines, so the increase in required reserves might be less than this simple calculation would suggest. On the other hand, the remuneration of required reserve balances should substantially reduce the incentive for banks to avoid the higher reserve requirements. On balance, it seems likely that an increase in reserve requirements could increase required reserve balances by a substantial amount.

Supply Side Measures

The Federal Reserve could take a number of steps to reduce the supply of reserves and thereby put upward pressure on the federal funds rate and other short-term rates. Several of these steps involve creating new, non-reserve liabilities of the Federal Reserve System. These actions would leave the size of the Federal Reserve's balance sheet unchanged, but would change the composition of Federal Reserve liabilities. Policy actions that fall into this category include issuance of term deposits and Fed bills; expanded use of the Supplementary Finance Program; and reverse repos utilizing Treasury, agency, and agency-backed MBS securities. The Federal Reserve could also take steps to reduce the size of its balance sheet and drain reserves. Actions that fall into this category include outright sales of Treasury, agency, and agency-backed MBS securities.

Measures that Change the Composition of Federal Reserve Liabilities:

(i) *Term Deposits*:[8] Term deposits could be offered to depository institutions at rates above the IOER rate. Term deposits would likely be non-negotiable deposits held by depository institutions and would not be eligible to satisfy reserve or clearing balance requirements.[9] Term deposits could be offered through a fixed rate subscription process or through an auction process. Demand for term deposits is uncertain but would presumably depend on the spread between the term deposit rate and the IOER rate, much as the demand for voluntary reserve targets described in the previous section would depend on where those rates stood relative to other rates. Term deposit rates would need to be below the rate at which depositories can borrow from the Federal Reserve in order to prevent gaming. Preliminary legal analysis suggests that offering term deposits would be consistent with current statutory authorities. And development work to implement much of the functionality for offering term deposits is underway at

[8] This summary draws on "Term Deposits," memorandum prepared by Steve Meyer, June 4, 2009.

[9] Negotiable deposits might be a more attractive instrument, but issuing such instruments would likely entail larger operational burdens.

present in the Statistics and Reserve System (STAR), and is expected to be completed later this year.

(ii) *Reverse Repos against SOMA Assets*:[10] The Federal Reserve could also drain reserves through term borrowing transactions collateralized by its holdings of Treasury securities, Agency debt, and Agency-backed MBS held in the SOMA portfolio. Such transactions are operationally easier to arrange with our holdings of Treasury and Agency securities. The Desk has long had the capability of conducting deliver-versus-payment reverse RPs against Treasury collateral. However, to support large-scale term reverse RPs, the Desk would want the capability to arrange these operations under tri-party arrangements with its custody banks. The capability to arrange reverse RPs against Treasury and Agency collateral is expected within the next couple of months. Partly because of the custody arrangements and involvement of the Investment Managers in the Agency MBS purchase program, operational capability to arrange reverse RPs against such collateral will take longer to develop, but will be completed before year-end. In any event, operational and portfolio considerations would prevent some portion of the SOMA portfolio from being available to support these transactions. In any operations of this type, expanding the list of counterparties beyond primary dealers would appear to be a very important issue, as the dealers are not natural investors of cash in wholesale markets. Rather, it would seem desirable to enlist money market mutual funds and other large short-term institutional investors to participate in these operations. Consequently, management of new counterparty arrangements could be an important dimension if this tool is to be efficiently utilized on a large scale.[11]

(iii) *Fed Bills*:[12] The Federal Reserve could pursue new legislation that would allow it to issue marketable obligations of specified maturities. Such obligations could be purchased by a wide range of counterparties including money funds.[13] Fed bills would be exempt from debt subject to the debt ceiling and could be issued in an auction format similar to that for Treasury bills. Before implementation, a number of operational and other issues would need to be addressed. However, it seems likely that issuance of Fed bills would be a very powerful tool for the

[10] This summary draws on "Reverse Repos and MBS Dollar Rolls," memorandum by John McGowan, June 12, 2009. As that title suggests, use of reverse dollar rolls ("selling the dollar roll") was examined, as an alternative to arranging reverse RPs against Agency MBS in the SOMA portfolio. However, that option, which unlike reverse RPs would reduce the size of the balance sheet, is not addressed in this memo because preliminary analysis was not very encouraging about its possible effectiveness, although arrangements exist at present for its use.

[11] Allowing other parties to bid through the dealers is being investigated as a possible way of simplifying the participation of non-dealers in these transactions.

[12] This summary draws on "Implementation Strategies for the Issuance of Federal Reserve Discount Note Obligations," prepared by Staff, June 12, 2009. This note also briefly discusses the option of revising the existing Supplementary Financing Program, which is summarized below.

[13] An early redemption feature, at some cost, might be particularly attractive money to funds as a means of bolstering their liquidity.

Federal Reserve if it were authorized, as it allows the Fed to reach more directly a wide variety of investors. At present, the legislative environment does not appear to be favorable for such an initiative.

(iv) *Expanded Supplementary Financing Program (SFP)*: The Federal Reserve could pursue new legislation that would allow it to request issuance of special Treasury bills, the proceeds of which would be held on deposit at the Federal Reserve. Such bills would be excluded from the debt subject to limit. Similar to Fed bills, an expanded SFP would be a very powerful tool for the Federal Reserve but the chances of legislative action on this front appear low at this point. Moreover, some have questioned whether authority along these lines would give the appearance that the Federal Reserve is overly reliant on the Treasury for the implementation of monetary policy.

Measures that Reduce the Size of the Federal Reserve's Balance Sheet

The Federal Reserve could also take steps to drain reserves through paring the size of its balance sheet—either by selling assets or by taking steps to curtail the usage of lending facilities. Both of these measures would likely be effective in draining reserves but would also likely have important economic effects, such as tightening financial conditions in bank and other wholesale funding markets and putting upward pressure on longer-term rates through portfolio supply effects. As a result, resorting to these tools for the narrow purpose of draining reserves may involve more complicated policy judgments than many of the other tools discussed above.

(i) *SOMA Asset Sales*:[14] The Federal Reserve could sell Treasury securities, Agency debt, and Agency-backed MBS on an outright basis as a way of reducing reserve supply. Because of the association of the securities that would be sold with the FOMC's purchase programs, communications around the purposes of such sales would be especially important to guard against undesired market reactions. In addition, asset sales could have significant effects on Federal Reserve income, as any losses on SOMA assets sold would need to be realized.[15] More generally, SOMA asset sales as a key tool to drain reserves may be limited by the possible impacts on longer term interest rate levels and trading conditions in markets for those assets that such sales would likely have.[16] Many of these same observations could also apply to large-scale redemptions, especially if they occurred within relatively narrow timeframes, although redemptions would not have the same implications for Federal Reserve income.

[14] This summary draws on "Portfolio Reduction Strategies through Redemptions or Outright Sales," memorandum prepared by Frank Keane, June 12, 2009.
[15] Rough estimates of possible realized loss associated with such sales in future years under alternative interest rates environments can be found in "Projections of Federal Reserve System Net Income," memorandum to the Federal Open Market Committee, forthcoming.
[16] Arguably, impacts of large-scale sales on longer term rates could be exploited in some fashion as an independent transmission channel. But these effects might be difficult to predict or control with much precision.

(ii) *Curtailing usage of lending facilities*:[17] The Federal Reserve could take pro-active steps to reduce usage of its credit and lending facilities, as a way of reducing excess reserve levels for the purpose of enhancing its control over short-term interest rates. However, such actions, if primarily designed and scaled with their reserve impacts in mind, could be disruptive to short-term funding market conditions. And in any event, the additional contribution of such measures to reductions in reserve levels is likely to be small in light of expected declines in facilities usage as underlying financial conditions improve.

Evaluating Measures Most Likely to be Feasible and Effective by Year-End

Excess reserve levels have generally ranged around a level of $800 billion to $900 billion in recent months, close to the levels first reached in late-2008.[18] Current projections based on existing credit and liquidity programs suggest that reserve levels could rise to over $1 3/4 trillion by the end of this year. And afterwards, even while falling as the portfolio naturally begins to shrink as assets mature, reserves would be expected to remain above current levels for up to four years into the future, absent other balance sheet developments.[19]

If the Committee wishes to target higher short-term interest rates, e.g. to raise its objective for the overnight federal funds rate, in an environment with exceptionally high levels of excess reserves, it would presumably begin to do so through increases in the IOER rate.[20] This is certain to put upward pressure on bank borrowing rates, and could prove to be sufficient by itself. But should the FOMC be uncomfortable with the levels of market rates in relation to the IOER rate that arise, e.g., should the experience of last fall repeat itself, the Committee may want to respond quickly exert tighter control over market rates. For this reason, development of some of the tools described above is proceeding, even in the absence of any certainty that they would be employed if a higher policy target were to be adopted. For similar reasons, initiatives to enhance arbitrage in federal funds and other bank funding markets continue to be carefully examined.

With a large volume of reserve balances expected to be outstanding and some questions about the strength of arbitrage in keeping the funds rate close to the IOER rate, much of the current focus is on development of the large-scale reserve-draining tools. The exact quantity of reserves that would be necessary to drain—or rather the level to

[17] Specific proposals for winding down usage of some of the new facilities is described in "Proposal for Winding Down Credit and Liquidity Facilities," memorandum to the Federal Open Market Committee, June 12, 2009.
[18] Reserve levels over this time have been reduced to the degree that Treasury has continued to invest funds at the Federal Reserve under the SFP. Such balances are currently $200 billion.
[19] Obviously any estimates of future reserve levels or balance sheet sizes are highly conjectural at this point. The values cited here are taken from "Projections of Federal Reserve System Net Income."
[20] The Board of Govenors has statutory responsibility for setting interest rates on reserve balances.

which reserve levels would need to be reduced to ensure satisfactory control over short-term interest rates—is uncertain. But for the sake of illustration, suppose that it was necessary to reduce the quantity of reserve balances outstanding to $200 billion. In that case, the Federal Reserve would need to drain nearly $1.5 trillion through various instruments if it had to do so fully at the end of 2009, but perhaps "only" about half as much if looking ahead a few years.

Among the various measures described above, several appear to offer greater potential in the near term as instruments for reducing reserve supply. In contrast, many of the other options would require legislative action or more substantial preparatory work before they would be operational. On the supply side, selling assets is certainly feasible as is constraining usage of various short-term lending facilities. However, as noted above, these actions could entail important repercussions for bank funding and overall financial market conditions. The ability to execute term tri-party reverse RPs against Treasury and Agency collateral will soon be feasible, but would be limited in size by our collateral holdings. Reverse RPs against Agency MBS will be operationally feasible later this year. Likewise, the Federal Reserve should be in position operationally to support a system of term deposits by the fall of this year. These latter two options offer considerably more scope for managing reserve supply, although in the meantime an expanded set of counterparties would likely need to be developed for reverse RPs to reach their potential as a reserve draining instrument. Two other options that otherwise would offer considerable scope for managing reserve supply even in the near term probably cannot be counted on at this point. Issuing Fed bills will require legislative action and thus does not appear feasible in the short run. The same is true for a revised Supplementary Financing Program, and it is unclear whether the Treasury would be willing or have the capacity to expand the program under its existing terms to meet the Federal Reserve's needs.