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Reducing the IOER Rate¹

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Introduction

In a memorandum to the FOMC last year, staff analyzed the likely effects of lowering the interest on excess reserves (IOER) rate to zero or possibly below zero. In that memo, staff concluded that setting the IOER rate to zero would probably result in short-term money market rates slightly above zero and greatly reduced trading volumes in overnight markets. In addition, money market fund assets would likely continue to trend down. Anticipating the effects of setting the IOER rate below zero was difficult. The ability of depository institutions (DIs) and the public to hold currency would prevent a sizable negative IOER rate from translating into significant negative short-term rates. It would be possible, however, to set a slightly negative IOER rate and exert some further modest downward pressure on market rates.²

Since August 2010, although the IOER rate has remained at 25 basis points, money market rates have dropped 10 to 20 basis points.³ The decline in these rates likely reflects several factors, including adjustments by the market to a higher level of reserve balances; a restriction in the supply of Treasury securities in the market, which has pushed down rates on Treasury repurchase agreements (repos); the April 1 change by the Federal Deposit Insurance Corporation (FDIC) to insurance premiums assessed on all liabilities of depository institutions; heightened risk aversion related to the European debt situation, and perhaps some institutions' shift away from overnight funding positions in an effort to comply early with expected liquidity rules.

As market rates fell, many of the predictions in the August memo came to pass, but to a lesser degree than the staff had anticipated, likely in part because the IOER rate did not change. In the current memo, we reassess our views on the effects of lowering the IOER rate to zero or perhaps to a negative rate in light of the recent experience with very low money market interest rates.

We restrict our analysis to the direct effects in money markets and whether there would likely be market disruptions. We assume that aggregate reserve levels will remain exceptionally high and that no other Federal Reserve actions are taken to influence the

¹ This note draws on the August 5, 2010, FOMC memo "Reducing the IOER Rate: An Analysis of Options" by Chris Burke et al. Chris Burke provided very helpful comments on this memo.

² This memorandum focuses on the rate paid on excess reserves and ignores the rate paid on required reserve balances. Required reserve balances are currently about \$35 billion and so are negligible compared to excess reserves of around \$1.6 trillion. Policymakers may wish to set the rate on required reserve balances to zero like the excess rate, or they may wish to pay 10 basis points or some other proxy for market rates in order to ensure that the implicit tax from reserve requirements is effectively eliminated.

³ We leave aside the recent period of higher money market rates that reflected the strains related to the debt limit negotiations.

level of short-term money market rates. Given the current very low levels of money market rates, much of the economic benefit to lowering the IOER rate would presumably come from the signal that such a move would send about the future stance of monetary policy; the direct effects of slightly lower money market rates seem unlikely to result in a significant boost to macroeconomic activity, although the incentives for banks to make loans or to purchase securities would be increased modestly. As described below, lowering the IOER rate to zero or lower would likely have additional effects on money markets beyond what has occurred over the past year. It remains difficult to assess the likely effects of setting the IOER rate below zero because such a change is unprecedented.

Current Environment

Since last August, money market rates have dropped 10 to 20 basis points, as shown in the table. Unsecured rates, such as the federal funds rate, the wholesale brokered Eurodollar rate, Libor, and commercial paper rates, are down about 10 basis points, with the effective federal funds rate now around 6 basis points. The GC repo rate declined about 20 basis points over the same period; the repo rate was at 1 basis point for most of July, and there have been reports of intermittent trades conducted at negative rates. Yields on short-dated Treasury bills fell close to zero, and have seen trading at negative rates.

Table – Money market rates and volumes

Basis points unless otherwise noted		
	Daily Average August 2010	Daily Average July 1 - July 27, 2011
Effective federal funds rate	19	7
Federal funds volume (\$,mil)	52,861	41,567
Effective Eurodollar rate	20	7
Eurodollar volume (\$,mil)	68,915	139,124
GC repo rate	22	1
Treasury repo volume (\$, mil) ¹	635,230	465,610
1 month Treasury bill rate	14	2
Overnight Libor	23	12
IOER rate	25	25
1-month financial commercial paper	21	9

¹ Triparty Treasury repo.

The overall decline in rates reflects several factors. The Federal Reserve's large-scale asset purchases simultaneously increased the total level of reserve balances and took

Treasury securities from the market. The former likely put some downward pressure on bank funding rates, and the latter probably pushed repo rates down some. Given that these markets are linked, the effects are intertwined and reinforcing. The supply of reserve balances was further increased and the supply of Treasury securities further reduced by the substantial reduction in the size of the Treasury's Supplementary Financing Program in the first quarter of 2011. In addition, the April 1, 2011, change to the FDIC's assessment rules appears to have reduced somewhat domestic banks' demand for overnight funds. Finally, heightened strains in Europe in recent months have prompted some flight to quality, and may have put further downward pressure on market rates.

The decline in rates, however, does not seem to have been accompanied by as large a decline in the volume of transactions in all money markets as we had anticipated at the time of the August 2010 memo. Volume in the repo market does appear to have declined, with Treasury repo transactions through triparty arrangements declining from about \$640 billion per day in the second half of last year to about \$465 billion now. DTCC Treasury repo volumes also declined, from about \$185 billion per day in the second half of last year to about \$100 billion in recent days. Transaction volume in the brokered federal funds market also fell, with daily volume of about \$40 billion recently compared to more than \$50 billion last year. In contrast, trading volume in overnight, wholesale Eurodollar transactions brokered in New York—a close substitute for federal funds for money center banks—more than doubled over the period. The increase is reportedly partially due to investors substituting out of repo investments into higher-yielding investments following the recent declines in repo rates to near zero. The combined volume of federal funds and these brokered Eurodollar transactions has risen, on net.

Very low short-term rates have reduced revenues for nearly all money market mutual funds (MMMFs) in the past couple of years, and most MMMFs are continuing to waive fees to prevent negative net yields for their investors. The recent declines in market rates have exacerbated the effect on MMMF revenues. That said, the industry to date has been quite resilient to very low rates, probably because asset managers wish to continue providing MMMFs as part of a full suite of investment vehicles for their customers. The number of MMMFs declined from 668 in August 2010 to 642 in May 2011, but the number of funds has been trending down for more than a decade and the recent decline does not appear to be outsized.

MMMFs currently have about \$2.7 trillion in assets under management. Investors in money funds have pulled back noticeably over the past year, with assets under management falling about \$155 billion. Much of this outflow likely reflects the very low net yields that such funds pay; on average, prime MMMFs currently pay net yields of 5 basis points, with gross yields of 25 basis points and expense ratios of 20 basis points. Government-only MMMFs tend to have even lower net yields. In addition, institutional investors' concerns about funds' exposures to European financial institutions triggered a wave of outflows from prime funds in June 2011. Given the unlimited insurance on non-interest bearing demand deposit accounts at banks, some investors may believe that a

FDIC-insured bank deposit with no interest provides a higher risk-adjusted return than very low MMMF yields.

Currently, low short-term rates are reportedly one of several reasons for a persistently elevated level of settlement failures (“fails”) in the agency MBS market. This is likely to impair smooth market functioning so long as rates remain low.⁴ However, a charge on fails on agency debt securities and agency MBS, announced by the Treasury Market Practices Group in April and finalized in July, will be implemented by market participants on February 1, 2012. The charge is expected to reduce fails and support liquidity in these markets. A similar fails charge already exists for transactions in Treasury securities and has effectively restrained the level of fails in that market.

Lowering the IOER Rate to Zero

Cutting the IOER rate to zero with no change in the level of reserve balances would most likely reduce trading volume in the brokered federal funds and the brokered overnight Eurodollar markets. Currently, it appears that the vast majority of transactions in these markets involve DIs borrowing funds from institutions that cannot receive interest on reserve balances either because those institutions do not have accounts at the Federal Reserve or, in the case of GSEs, are not eligible to earn such interest from the Federal Reserve. This trading, therefore, likely reflects arbitrage between market rates and the IOER rate. Another segment of those markets comprises depository institutions that are borrowing because of a shortfall in funding. Of these two motives for borrowing in wholesale bank funding markets, the first would be eliminated if the IOER rate were set to zero. As a result, volume and rates in the federal funds market and the wholesale brokered Eurodollar market would primarily reflect borrowing by financial institutions that are facing short-term funding needs.

The likely effect on rates in these markets, however, is ambiguous. Demand related to arbitraging the IOER would end, leaving only institutions with funding needs borrowing in the market. If those borrowers are considered good credit risks by the GSEs, some trading would likely take place at rates as low as 2 to 3 basis points. However, anecdotal reports suggest that many of the borrowers that are facing funding pressures are of lesser credit quality, so the average rate in the markets may rise.⁵ Currently in the federal funds market, the upper tail of the distribution of rates observed is near 25 basis points, so if this trading reflects funding needs, the observed average rate may move to this higher level.

For the repo market, volume might not be diminished much as many of the cash investors in repo have limited alternative investment options. For example, some types of

⁴ Market participants have little or no incentive to avoid failing in a low interest rate environment.

Although the impetus for any particular episode of fails may vary, the absence of an explicit cost of failing, especially in a low interest rate environment, is a key condition for protracted instances of high levels of fails. See, Treasury Market Practices Group, “Understanding Settlement Fails in Agency Mortgage-Backed Securities,” April 29, 2011, www.newyorkfed.org/tmpg/tmpg_04292011.pdf.

⁵ In recent days there has been tiering in the overnight brokered federal funds market, with U.S., Canadian, and Australian borrowers paying on average 7 basis points less than some European borrowers.

government money market funds restrict investment to Treasury repo, and these funds may have limited scope for leaving substantial amounts of cash uninvested. If other money market rates were to fall roughly to zero, investors in those markets may find the security of repo investments to be relatively more attractive, suggesting that volume in this market could even rise. On net, these forces could put additional downward pressure on repo rates, and the incidence of negative rates could be somewhat more frequent.

For the MMMF industry, lower money market rates would cause further losses of revenue and cause asset managers to choose between heftier subsidies for their funds and closing the funds. As noted in the August 2010 memo, sponsors may be willing to endure for some time low (or negative) revenues to avoid losing customers and business lines. The lack of significant exit from the industry in the past year suggests that the industry is quite resilient to low rates, and it would seem that money market rates may not be able to decline significantly further. However, low rates have already contributed to the substantial net redemptions from MMMFs, and such outflows may accelerate if rates were to fall even a bit further. Outflows driven by low yields could be orderly and may not be disruptive to market functioning, but the MMMF industry already faces challenges that could be amplified.

Lower market rates, especially repo rates, would likely result in a higher incidence of fails in the agency MBS market. However, based on the experience with the fails charge on Treasury securities, after the fails charge comes into force early next year, it is likely to be sufficient to prevent most fails. Until that time, however, fails and the associated market frictions could get more pronounced.

Lowering the IOER Rate below Zero

Setting the IOER rate to a modestly negative value could push down money market rates a bit more than the case with the IOER rate at zero. Evaluating the likely effects on money market functioning is difficult because, as noted in the August 2010 memo, there is very little domestic or international experience with negative policy rates on which to draw. Even in Sweden, where the Riksbank maintained a negative interest rate on excess deposits held overnight by DIs between July 2009 and August 2010, there was little impact on market rates, likely because the deposit facility for which the rate was negative was little used.⁶

Although recent repo transactions at negative rates indicate that market transactions below zero percent are clearly possible, it is hard to know if all money market rates might turn negative. A negative IOER would likely result in lower federal funds and Eurodollar rates than would be the case if the IOER rate was zero. As with an IOER rate of zero, there would be no incentive to arbitrage the IOER rate, so borrowing for that purpose would cease and only idiosyncratic borrowing by institutions to cover funding needs would likely remain. However, the negative return on reserve balances could make some institutions more willing to lend than in the case of an IOER rate of zero, given the cost

⁶ More information on the Riksbank's experience is provided in a note dated July 7, 2010, by David Bowman, "The Riksbank's Experience with Negative Deposit Rates."

of holding funds at the Federal Reserve. This increase in supply could push down rates. It is hard to know how much trading in unsecured markets would happen at negative rates. There appear to be greater frictions in the repo market that have contributed to the trading at negative rates in that market. Nevertheless, lending at negative rates in unsecured markets remains rational if the cost of leaving funds uninvested at a Reserve Bank is even higher.

As noted in the August 2010 memo, there are a few ways that DIs may react to a negative IOER rate that might mitigate the transmission of the negative rate to market rates. For example, DIs could reduce reserves by increasing their holdings of cash. The August 2010 memo cited estimates of transportation and storage costs associated with holding currency to develop a very rough estimate of negative 35 basis points as the level of the IOER rate that would trigger a substantial increase in currency demand. The threshold rate could be much closer to zero, however, so extreme caution would be required for setting a negative rate.

The disruptions that might result from negative rates are also unclear. If Treasury bill yields were to fall persistently into negative territory, the Treasury might, at least temporarily, encounter difficulties because it cannot currently accept negative rates at its auctions.⁷ In principle and with time and effort, systems could be modified to do so. However, the Treasury might not want to enable negative rates on bills out of concerns for the effects on retail investors. In addition, negative rates would presumably boost fails in the agency debt and MBS market until the fails charge comes into force.

Setting a negative IOER rate would be unprecedented in the United States. Moreover, although this memo has discussed setting the IOER rate to a negative value, it seems unlikely that that statutory authority for paying interest on Federal Reserve accounts could be relied upon as a basis for setting a negative rate. However, the Federal Reserve Act gives the Board of Governors other authority to set certain terms under which deposits are held at the Reserve Banks and to write rules to effectuate the purposes of reserve requirements, which would seem to provide the authority to charge for balances held in accounts at the Reserve Banks, although a more definitive legal analysis would be needed before enacting such a policy. Operationally, modification and testing of the computer systems that calculate and pay interest on reserves might take up to several months. In addition to the reprogramming and testing of the application that processes reserves administration, it seems possible that other computer systems, such as those for accounting, may require some adjustments or testing, as well. Initiating the changes to these systems in anticipation of a possible policy change could limit the lag but would also delay other automation efforts, potentially unnecessarily.

A related issue is that a negative IOER rate would in many ways be equivalent to a tax on the banking sector. As a result, bank earnings could be reduced, which might put downward pressure on bank stock prices. If this effect were significant, it could reduce banks' return on capital and lead to distortions in the banking industry.

⁷ Some bill auctions have recently seen stop-out rates at zero percent.

Effect of lowering the IOER rate on economic activity

As noted in the introduction, we suspect that most of the economic benefit to lowering the IOER rate would come from the signaling effect. If a reduction in the IOER rate caused all short-term interest rates, government and private, to decline about 5 to 10 basis points, the likely macroeconomic consequences would be quite small. Simulations of the FRB/US model indicate that a 10 basis point reduction in short-term rates would boost the level of real GDP by only one tenth of a percent by the end of 2012; the accompanying changes in the unemployment rate and inflation would be negligible. If market participants were to instead interpret the cut as a signal that, beyond 2012, the FOMC was likely to be more aggressive than previously thought in promoting economic recovery, then the macroeconomic effects of this policy action might be more substantial.

Conclusion

With money market rates already quite low, lowering the IOER rate to zero would likely result in some very modest, further declines in market rates. Trading volumes, especially in unsecured bank funding markets, would likely fall, at least somewhat, because the incentive to arbitrage the IOER rate would be eliminated. Setting the IOER rate below zero would require some modifications to Federal Reserve systems, but seems possible. Gauging the effects of a negative rate on markets and the economy, however, is very difficult. Moreover, it seems that only a modestly negative rate would be possible because DIs could likely find some means of avoiding the cost of more deeply negative rates.