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9. Effects of Very Low Policy Rates on Money Market Funds

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Executive Summary

This note examines the likely effects of very low policy rates on money market funds (MMFs) and the potential for strains at these funds to curtail the provision of short-term financing throughout the economy. Very low effective federal funds rates (FFRs) have already reduced revenues for some MMFs, because yields on their portfolio instruments have fallen short of the fees they normally charge. Further reductions in the effective FFR would likely cause additional revenue losses, and low yields probably also would lead to some investor redemptions from MMFs. For the most part, however, we believe that strains at MMFs and the responses of fund shareholders are unlikely to cause a rapid decline in the financing that MMFs provide, even if the effective FFR falls to zero. The main exception to this general conclusion is that deeper revenue losses for MMFs that focus on Treasury repos could lead to closures of funds and a reduction in financing through repurchase agreements, although the Desk could compensate for such a decline by expanding the scale of its own repo activities if the FFR target is at or near the zero bound. Finally, we note that pressures on the MMF industry make any forecast of MMF developments more uncertain than usual.

Our conclusions draw on estimates of revenue losses at MMFs due to low yields. If the effective FFR were to stabilize at 50 basis points and the recent configuration of spreads among other money-market instruments persists, we estimate that prime MMFs would experience negligible revenue losses, but Treasury-repo and Treasury-only funds would lose about one-quarter and one-half of their revenues, respectively. The anticipated losses for prime funds would continue to be small even at a zero effective FFR. However, Treasury-repo and Treasury-only funds would experience an almost total loss of revenue at an effective FFR of either 25 basis points or zero. These projections are sensitive to our assumptions about spreads on money market instruments; in particular, if spreads were to revert to levels seen during the 2003-2004 episode of low interest rates, we would expect much more substantial industry-wide revenue losses at a zero effective FFR.

Low MMF yields may prompt investor redemptions, which would cause additional revenue losses and sales of assets by fund managers. However, investor behavior during the 2003-2004 episode and in recent weeks indicates that redemptions from most MMFs probably would not be abrupt, with the possible exception of Treasury-only and Treasury-repo funds held by institutional investors if net yields fall to zero.

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Current Conditions and Risks for Money Market Funds

Money market funds currently have \$3.7 trillion in assets under management (see line 1, column 1 of the table on exhibit 1). Prime funds (line 2) account for nearly half of the industry's assets and are important investors in private money-market instruments. Funds that invest exclusively in Treasury repos and short-term Treasury securities (lines 3 and 4) together account for roughly 20 percent of total money fund assets, and funds that invest in a mixture of government and agency securities (line 5) account for nearly another 20 percent. Tax-exempt funds (line 6) represent the rest of the industry.²

On average, MMFs currently earn gross yields of 1.65 percent on their portfolio assets (column 2) and pay fund shareholders *net* yields of slightly less than 1.3 percent (column 3). The difference, 0.35 percent of assets (column 4), is the average expense ratio that MMFs charge their shareholders. Annual industry revenues—fees times assets—total \$12.8 billion (column 5) and have grown 18 percent in the past year, because of increased assets under management.

Very low interest rates in money markets are reducing revenue for many MMF management firms because their revenues come from the funds' gross yields. These yields vary considerably across different types of funds, from an average of 2.3 percent for prime funds to just 0.5 percent for Treasury-repo funds. In the Treasury-repo sector, gross yields have already fallen short of fund expense ratios for funds that manage 19 percent of the sector's assets, and managers of these funds have waived a portion of their normal fees. Gross yields will probably drop further even if the effective FFR holds steady, as MMF yields typically take several weeks to adjust to changes in the effective FFR, and additional reductions in the effective FFR would likely pressure asset managers to cut revenues more deeply. Another concern is that investors might quickly redeem shares of low-yielding MMFs, forcing the funds to dispose of assets at depressed prices.

MMFs are very significant investors in some credit markets. Although prime funds have shrunk by \$290 billion since the end of August, they still held an estimated

² This memo focuses on the mutual funds that qualify as "money market funds" under Securities and Exchange Commission Rule 2a-7, which sets credit-quality standards, maturity limits, and diversification requirements for the assets that MMFs hold. Rule 2a-7 also allows MMFs to use accounting rules that facilitate maintaining a stable net asset value (NAV). Our focus on MMFs excludes some closely related investment vehicles, including offshore money funds and so-called "enhanced-cash" funds. Dollar-denominated offshore money funds currently have about \$370 billion in assets under management, with about two-thirds of the total in funds similar to prime MMFs and most of the remainder in funds resembling Treasury-only and Treasury-repo MMFs. Offshore money funds are not regulated under Rule 2a-7 but often adhere to its standards, so the results presented below on revenue losses at low effective FFRs for prime, Treasury-only, and Treasury-repo MMFs should be broadly applicable to their offshore money-fund counterparts. Enhanced-cash funds, which include "cash-plus," "strategic-cash," and ultra-short bond funds, held roughly \$500 billion in assets in mid-2008. These funds' portfolio holdings are similar to—albeit somewhat riskier than—those of prime MMFs, but the enhanced-cash funds do not maintain stable NAVs. As a result, these funds probably would not face cost pressures due to a low effective FFR, because they could keep expense ratios above their portfolio gross yields and simply allow NAVs to decline.

39 percent of outstanding commercial paper in early December. They also have substantial investments in bank certificates of deposit, floating rate notes, and other private paper. Prime funds, Treasury-repo funds, and government and agency funds together lend \$620 billion through repurchase agreements, and tax-exempt MMFs held 18 percent of outstanding municipal securities at the end of September.³ Hence, one possible risk posed by lower short-term rates is that the closure of unprofitable funds and shareholder redemptions at other MMFs could curtail the availability of short-term credit and other forms of financing in markets in which MMFs are important investors. We believe that a widespread curtailment of financing is unlikely, for several reasons described below. That said, we do have concerns about reductions in lending by MMFs in Treasury repo markets, although the Desk could compensate for such a pull-back by expanding its own repo activities if the FFR target is at or near zero.

Projections of MMF Revenue Losses

To estimate the magnitude of MMF revenue losses over a range of effective FFRs, we project losses for each individual fund and sum those losses over all funds. The revenue loss for each fund is assumed to be the amount (if any) by which its annualized “baseline” fees exceed its predicted gross yield, multiplied by its current asset base:

$$\text{Annualized revenue loss} = \begin{cases} (\text{baseline fees} - \text{predicted gross yield}) \times \text{assets} & \text{if fees} > \text{yield} \\ 0 & \text{otherwise} \end{cases}$$

We set each fund’s baseline fees equal to its expense ratio (expressed as a percentage of assets) charged in August 2008, when the distribution of net yields suggests that no MMF was waiving fees for the purpose of maintaining a positive net yield.

Current market conditions make predictions of gross yields especially uncertain. As shown in the lower panel of exhibit 1, over the past year, average spreads to the effective FFR for different types of MMFs have been well outside their historical ranges because of concerns about credit quality, a flight to safe and liquid assets, and strains in financial markets. Because the degree to which these influences will continue to affect spreads is difficult to predict, we project losses for each MMF using its average gross-yield spreads to the effective FFR for two sample periods: (i) the past 52 weeks (ending December 2, 2008) and (ii) July 2003 to June 2004, the previous period when the FFR target was 1 percent.

Estimated revenue losses are shown in exhibit 2. Each panel shows, as a function of the effective FFR, projected MMF revenue losses as a percentage of baseline revenues. The black line in each panel depicts the estimated revenue loss given the average gross-yield spread over the effective rate for the past 52 weeks, while the red

³ Investment Company Institute, *Trends in Mutual Fund Investing, November 2008*; Federal Reserve, *Flow of Funds Accounts of the United States, Second Quarter 2008*; Federal Reserve, *Commercial Paper Rates and Outstanding*; iMoneyNet.

dashed line presents the estimated revenue loss given the average spread from July 2003 to June 2004.

As shown in the upper left panel, if the effective FFR were to stabilize at 50 basis points and the past year's average spreads were to persist, we would anticipate that the MMF industry would have to reduce shareholder expenses—which represent the funds' revenues—by 7 percent to keep fees from exceeding gross yields. At effective rates of 25 basis points and zero, expected losses would climb to 17 percent and 22 percent of revenues respectively. Projected losses, especially at low effective rates, are sensitive to the sample period used to estimate average spreads. Based on spreads in the 2003-2004 period, which were lower than recent spreads for most MMFs, expected industry losses at a zero effective FFR would be 66 percent of revenue—nearly triple those derived using the past year's spreads.

Risk of a Curtailment in the Availability of Financing

Because MMFs are important providers of credit and repo finance for businesses, financial institutions, and state and local governments, serious strains on these funds could conceivably reduce the availability of financing for important sectors of the economy. We assess this risk by examining the expected revenue losses for each type of fund.

For prime funds, as shown in the upper right panel of exhibit 2, projections based on the unusually wide spreads over the past year imply very small revenue losses even at an effective FFR of zero. The losses, however, would be much larger if we instead used the spreads that prevailed from 2003 to 2004. For government and agency MMFs and tax-exempt MMFs (the middle panels), the results are qualitatively similar to those for prime funds—the projected revenue losses under the recent configuration of spreads are relatively small, but losses would be considerably larger if spreads returned to 2003-2004 levels.⁴

The picture for Treasury-repo and Treasury-only funds (the lower panels) is just the opposite: Unusually low recent spreads for these funds put them at risk of major revenue declines. Assuming that these recent spreads persist, we estimate that Treasury-repo and Treasury-only funds would lose 26 percent and 43 percent of revenue, respectively, at an effective FFR of 50 basis points. Losses for these funds would jump to 81 percent and 88 percent, respectively, at an effective FFR of 25 basis points, and at a zero effective rate, their revenues would be almost completely wiped out. These estimates are based on the assumption that gross yields will not fall below zero, but gross yields for Treasury-repo and Treasury-only funds over the past year have averaged about $\frac{1}{4}$ percentage point below the effective FFR (see column 6 of the table). Thus, a forecast

⁴ For tax-exempt funds, we forecast gross yields using spreads between these yields and 65 percent of the effective FFR, based on the assumption that pricing for short-term tax-exempt securities reflects a marginal tax rate of 35 percent. In computing average spreads for these funds for the past-year sample, we excluded observations for weeks ending in September and October 2008, because the spike in short-term tax-exempt rates in those months appears to have been short-lived.

that uses recent spreads would predict, at a zero effective rate, negative gross yields and revenue losses for these funds in excess of 100 percent (fund sponsors would have to *pay* to maintain net yields of zero). The outlook for Treasury-repo and Treasury-only funds would improve somewhat if spreads were to revert to their 2003-2004 levels; in that case, revenue losses for both types of funds would be less than 10 percent at an effective FFR of 50 basis points and would be roughly 30 percent at an effective FFR of 25 basis points. But these funds would still lose virtually all revenue at an effective FFR of zero.

Large revenue losses for Treasury-only funds likely would not be a significant concern for policymakers, as robust demand for safe and liquid assets by other investors would cushion any reduction in MMF holdings of Treasury securities. However, the very substantial predicted revenue losses for Treasury-repo funds raise concerns that the closure of many of these funds would reduce the availability of financing through Treasury repurchase agreements.

Several factors ameliorate the risk that strains at MMFs might curtail the provision of short-term financing to other economic sectors.

- First, firms that manage MMFs historically have earned substantial returns from this activity and probably would tolerate revenue losses for a while. Interviews with MMF managers confirm their willingness to continue operating funds despite considerable revenue losses, although several have suggested that they might begin shutting down Treasury-only and Treasury-repo funds after six months to one year in the current interest-rate environment.
- Second, there may be scope for MMF managers to offset some revenue losses from the waiver of asset-based fees by charging account-based and transaction-based fees that are not limited by gross yields. Several large mutual fund families already impose such fees, such as low-balance and account-maintenance fees.⁵
- Third, while spreads on commercial paper and short-term tax-exempt securities may narrow in coming months, they are less likely to do so in an economic climate in which the FOMC deems it necessary to maintain a very low effective FFR. Moreover, yields on instruments for which MMFs are the only (or dominant) investors would probably fall only to levels that leave those instruments profitable for MMFs to hold.
- Fourth, as noted above, if the FFR target is at or near zero, the FOMC could compensate for reductions in the supply of repo financing caused by strains at Treasury-repo MMFs by expanding the Desk's repo activities.

⁵ To be sure, MMFs face legal hurdles that would prevent them from charging some types of fees on a per-account basis. Moreover, asset managers in interviews have mostly rejected the idea of using account-based fees to offset any reductions in asset-based fees, out of concern that shareholders would view new fees as onerous. However, faced with a choice between charging such fees and liquidating a fund, MMF managers may reconsider.

- Fifth, sudden, large-scale redemptions, which might force MMFs to dispose of assets quickly, are unlikely for most funds. Amid heightened concerns about the credit risk and liquidity of other types of investments, low net yields are probably less important than usual for MMF investors. Indeed, Treasury-repo funds, which already pay net yields averaging just 26 basis points (line 3 of the table), have attracted net inflows of 3 percent of assets in the past three weeks. Retail investors in the past have responded only slowly to differences in yields for MMFs and substitutes such as bank deposits. Institutional investors respond more quickly to differences in yields, and one potential concern is that a further decline in yields on Treasury-repo and Treasury-only MMFs may prompt these investors to move money quickly from MMFs to FDIC-insured non-interest-bearing transactions accounts. The MMFs in question hold highly liquid assets, which would limit the risk that such outflows would be disruptive.⁶

A more disturbing—but very unlikely—possibility is that an MMF might “break the buck” (that is, suffer a capital loss of more than one-half percent of assets) because a fund manager chose to collect fees that exceeded an MMF’s gross yield for an extended period. Such a choice appears improbable, as it would cause considerable damage to the manager’s reputation. Managers will have some time to respond to low yields, and in extreme cases would probably either liquidate or sell a fund, but not let its NAV decline.

Lessons from the 2003-2004 Episode of Low Short-term Interest Rates

During the period from July 2003 to June 2004, when the FOMC maintained an FFR target of 1 percent, 65 percent of MMFs waived some fees.⁷ A regression analysis for this period indicates that funds, on average, cut fees more than one-for-one with their projected shortfalls of gross yields relative to baseline expenses. Indeed, MMF managers have told us in interviews that, during the 2003-2004 episode, they usually waived fees to maintain net yields of 5 or 10 basis points, and some managers are doing so again. To the extent that managers continue to maintain such *positive* net-yield targets, our revenue-loss projections will *understate* actual losses, as we assume that fees are waived only to maintain a net yield of zero.

While investor redemptions from both retail and institutional MMFs reduced assets under management in the industry by about 15 percent from mid-2003 to mid-2005, the redemptions were neither sudden nor precipitous (exhibit 3, upper panel). This experience provides some support for our view that any outflows prompted by further declines in MMF yields are unlikely to be abrupt for the industry as a whole.

⁶ In addition, investors’ concerns about strains at MMFs appear to have been allayed by the insurance provided by the Treasury’s Temporary Guarantee Program for Money Market Funds and by liquidity support for money-market instruments provided by several of the Federal Reserve’s new liquidity facilities. These programs would be expected to reduce the likelihood of sudden, precipitous outflows from MMFs.

⁷ The bulk of these funds had already been waiving some fees in previous years when the FFR target was well above 1 percent. Indeed, MMF managers commonly charge fees lower than their prospectuses allow to maintain net yields that are attractive to investors.

In 2005, as the previous low-rate episode was ending, the number of MMFs in operation fell from 943 to 871, the largest annual decline on record. But the number of MMFs has trended down since it reached a peak of 1045 in 1999, and the decline has not been disruptive—indeed, since 1999, industry assets under management have more than doubled. Moreover, with nearly 800 MMFs still in operation in an industry characterized by substantial economies of scale, some additional consolidation might be a positive development.

Uneven Effects Across MMF Sponsors

The lower panel of exhibit 3 shows distributions of predicted revenue losses across the 132 MMF sponsors, including 47 “small” sponsors that manage less than \$1 billion in assets and 11 “large” sponsors that manage more than \$100 billion. If the effective FFR were to stabilize at 50 basis points, the average gross-yield spreads observed over the past year imply that the vast majority of sponsors would lose less than 20 percent of their MMF revenue (the solid blue bars in the left panel). Only five sponsors would lose more than 40 percent—of these, four are small and none large. At an effective rate of zero (the solid blue bars in the right panel), 19 of the 132 sponsors would suffer revenue losses greater than 40 percent, including eight that would lose more than 80 percent (five of those eight are small and none large). However, if spreads reverted to levels seen in 2003-2004, 52 sponsors (28 small, none large) would have revenue losses exceeding 80 percent at an effective FFR of zero.

Variation in the expected losses among sponsors reflects differences in their sizes and in the types of funds they offer. As indicated above, smaller fund families would be hit hardest, mainly because they tend to offer retail MMFs with higher expenses. Fund managers with relatively large Treasury-repo and Treasury-only offerings also would be disproportionately hurt. Asset managers whose MMFs are sold by third-party brokers may face especially difficult challenges, as expense ratios for their funds include fees of as much as 1 percent of assets to compensate the brokers. These fees cannot be easily waived, although several MMF managers have told us that they have negotiated some reductions in such fees to help keep expenses below gross yields.

MMF sponsors that choose to extend their funds’ participation in the Treasury’s Temporary Guarantee Program through the end of April 2009 would pay the 4-basis-point (annualized) premium out of gross yields, so these premium payments would increase our revenue-loss estimates. For example, industry-wide participation in the program would raise estimated revenue losses at a zero effective FFR (under the current configuration of spreads) from 22 percent to 26 percent. Sponsors of MMFs with near-zero gross yields would have to pay premiums out of pocket; hence, very low interest rates will likely be a factor weighing against continued participation in the program by some Treasury-only and Treasury-repo funds.

Uncertainty Amid Recent Strains in the MMF Industry

Our primary conclusion is that very low short-term policy rates will lead to large revenue losses for some MMFs, but that substantial spillovers to the rest of the economy are unlikely. That said, recent strains in the MMF industry make any forecast of MMF developments more uncertain than usual. Prime MMFs are still recovering from the massive net redemptions that followed the mid-September news that the Reserve Primary fund had broken the buck. Many asset management firms have recently subsidized their prime MMFs to maintain stable NAVs, and these heightened costs and capital risks may have reduced managers' willingness to endure the losses associated with very low interest rates, particularly because many management firms have recently experienced large revenue losses as assets have declined in non-MMF product lines. MMF managers express concerns about elevated risks of large-scale MMF redemptions because investors who have quickly shifted assets into Treasury-only, Treasury-repo, and government and agency MMFs may reverse course. We believe that these concerns warrant careful monitoring but that the risk of sudden, disruptive spillover effects from strains at MMFs remains low.

Exhibit 1 Money Market Funds and Low Interest Rates

Summary statistics for money market funds

Type of fund	Current data (week ending December 2, 2008)			Data for week ending August 26, 2008		Average gross-yield premium over effective FFR (ppts.) ¹	
	Assets under management (\$bill)	Average gross yield (pct.)	Average net yield (pct.)	Average expense ratio (ppts.)	Annual revenue (\$bill) ²	November 2007 - November 2008 ³	July 2003- June 2004
		(1)	(2)	(3)	(4)	(5)	(6)
1. All MMFs	3656.8	1.65	1.29	0.35	12.80	0.51	0.08
2. Prime	1690.5	2.26	1.87	0.37	6.16	1.01	0.12
3. Treasury-repo	342.3	0.53	0.26	0.31	1.07	-0.19	0.03
4. Treasury-only	412.3	0.77	0.45	0.31	1.29	-0.26	-0.02
5. Government and agency	718.2	1.50	1.15	0.33	2.36	0.52	0.08
6. Tax-exempt	493.6	1.30	0.89	0.39	1.93	0.72	0.38

Source: Staff calculations based on iMoneyNet data.

Notes. Averages are weighted by assets.

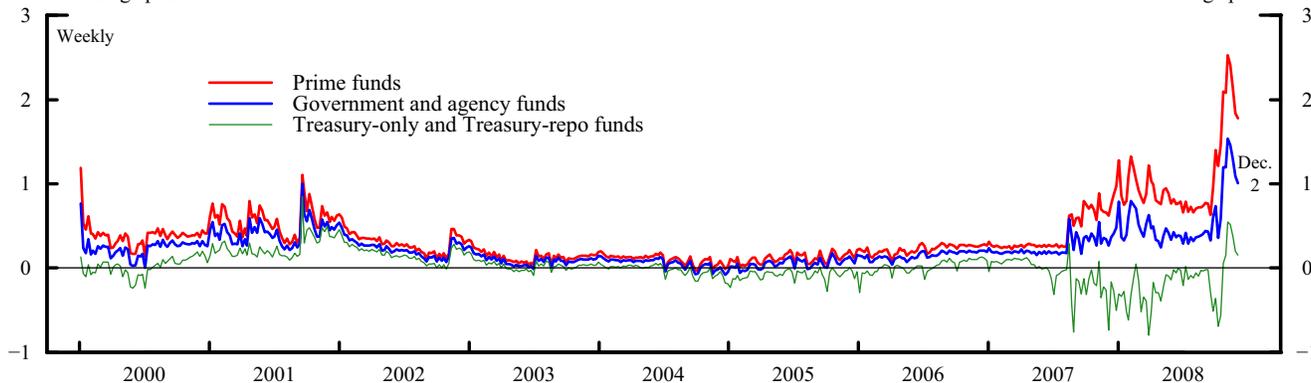
1. Gross-yield premium for tax-exempt funds is gross yield less 65 percent of the effective federal funds rate.

2. Based on current assets (column 1) and expense ratios from August 26, 2008 (column 4).

3. Sample period for tax-exempt funds excludes weeks ending in September and October 2008.

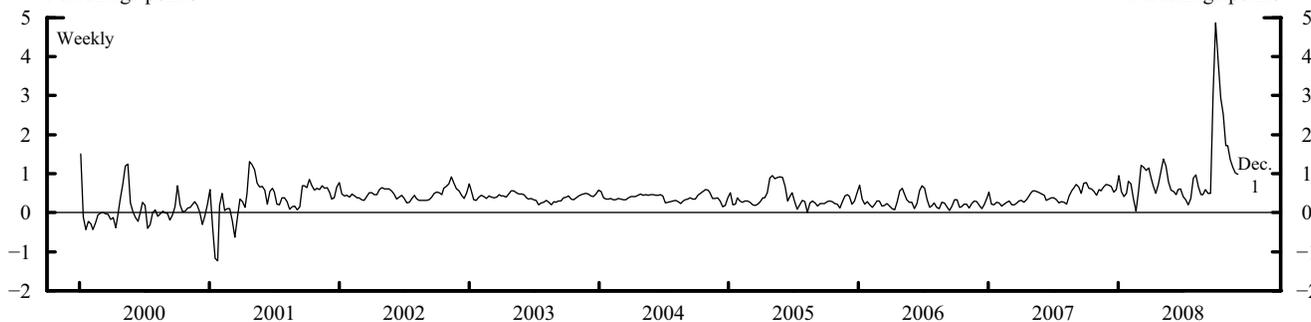
Taxable MMF Gross Yields Less Effective FFR

Percentage points



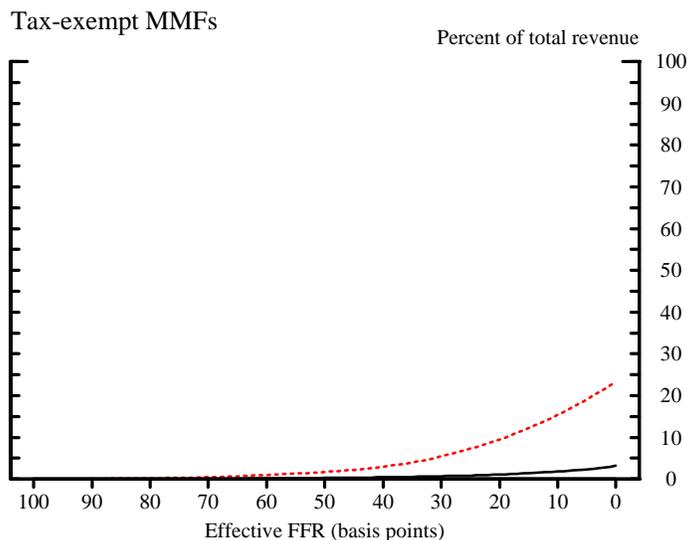
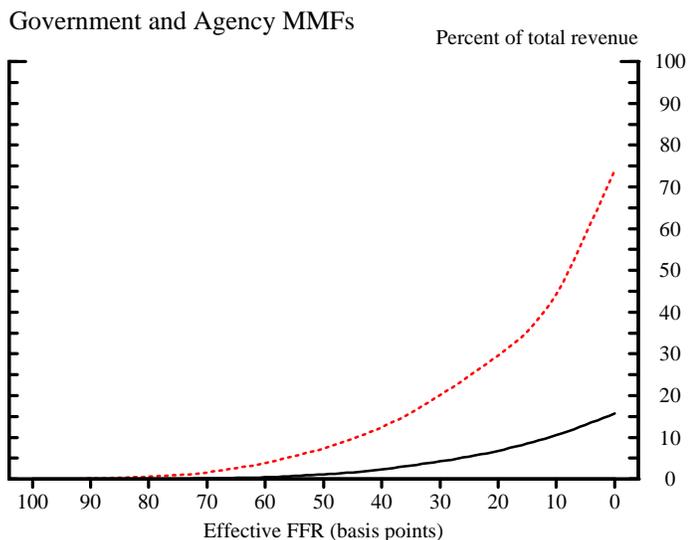
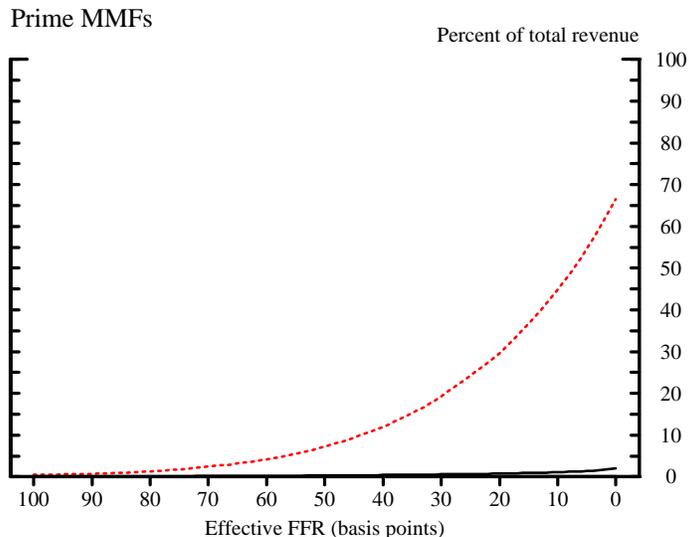
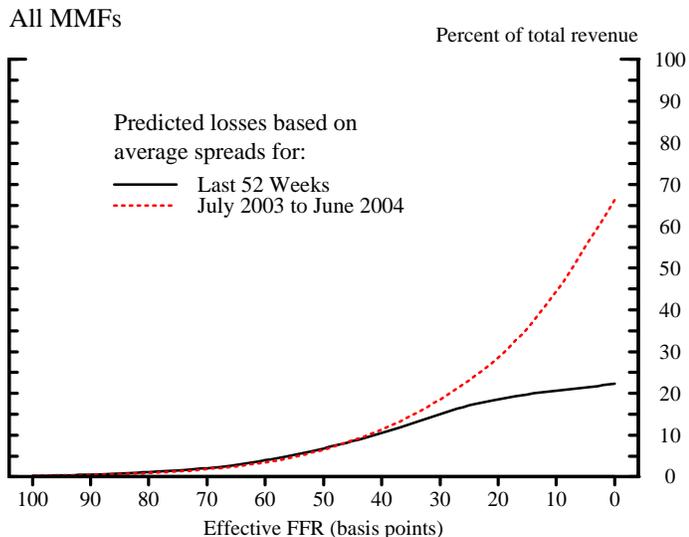
Tax-exempt MMF Gross Yield Less 65 Percent of Effective FFR

Percentage points



Source: Staff calculations based on iMoneyNet data.

Exhibit 2 Estimated MMF Revenue Losses and the Effective Federal Funds Rate



Note. Solid line represents predicted losses based on average spreads for the last 52 weeks, excluding weeks ending in September and October 2008.

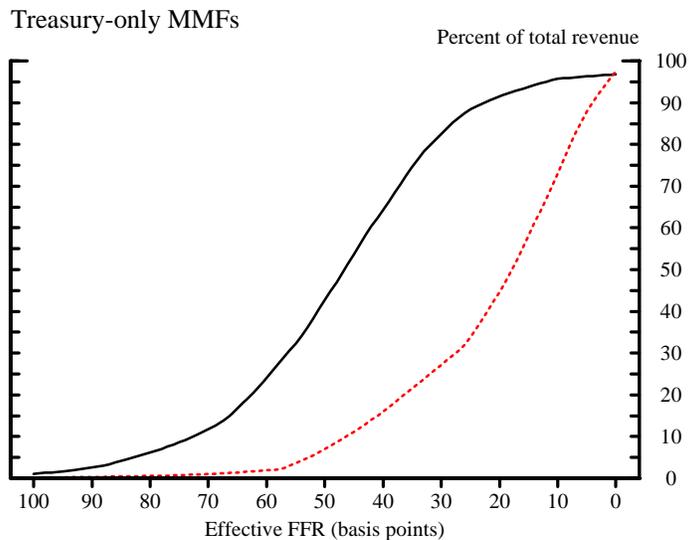
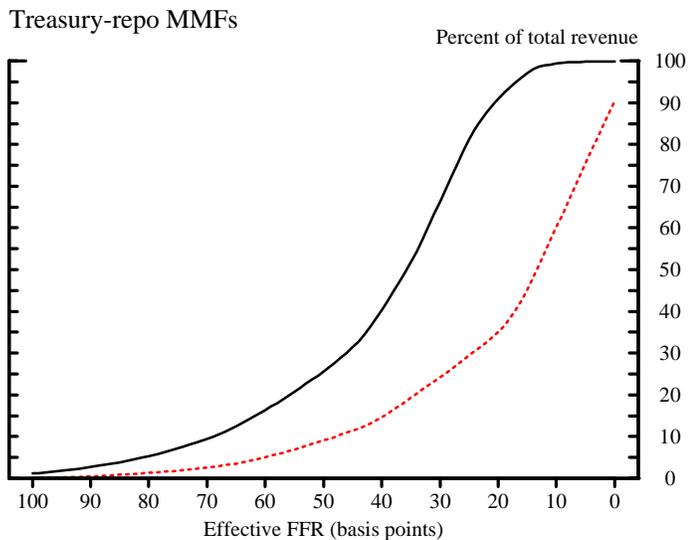


Exhibit 3 Money Market Funds and Low Interest Rates

