Policy Rate Uncertainty and Money Market Funds (MMF) Portfolio Allocations

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Abstract

We find that an increase in policy rate uncertainty is associated with an increase in MMF portfolio allocations towards assets with shorter-dated maturities. We also find that the direction of uncertainty matters: MMF portfolio maturity is more sensitive to uncertainty when it relates to changes in expectations for a larger increase or a smaller decrease in the policy rate than when it relates to changes in expectations for a smaller increase or a larger decrease in the policy rate. Furthermore, for MMF that are eligible to participate at the Federal Reserve's Overnight Reverse Repurchase Agreement (ON RRP) facility, we find that when policy rate uncertainty increases, MMF adjust their portfolio composition by increasing their take-up at the facility. This suggests that the ON RRP facility helps smooth fluctuations in short-term funding markets.

Keywords: money market funds, portfolio allocations, monetary policy expectations, uncertainty, Federal Reserve, ON RRP

JEL Classification: G11, G23, E52

1 Introduction

Money Market Funds (MMF) are an integral part of financial markets as they provide low risk, highly liquid shares to investors. As of December 2024, MMF held around $7.2 trillion in assets under management (AUM). MMF invest in short term, liquid securities including U.S. Treasury bills, commercial paper, certificate of deposits, and repurchase agreements. The interest rate on these instruments is closely related to the monetary policy rate and its expected path. Furthermore, eligible MMF play a role in the implementation of the monetary policy through their participation at the Federal Reserve's Overnight Reverse Repurchase Agreement (ON RRP) facility which serves as a supplementary policy tool to help control the federal funds rate. In terms of MMF portfolio composition, the ON RRP is the closest substitute to private repo and Treasury bills and it plays an important role in MMF portfolio management.

As MMF yields are closely related to the policy rate path and MMF play an important role in the Fed's implementation framework through their participation at the ON RRP facility, it is important to understand MMF portfolio decisions as they relate to monetary policy. In this paper, we look at the effect of policy rate uncertainty on portfolio allocations. Our analysis covers the period November 2010 to December 2024. We use two distinct measures of interest rate uncertainty: market- and survey-based measures. Our market-based measure is the swaption-implied volatility from derivatives based on the policy rate. Our survey-based measures are based on the forecast for the federal funds rate (FFR) - the Fed's policy rate - from the Blue Chip Financial Survey. We construct three survey-based measures of policy rate uncertainty: range of the forecast (dispersion across forecasters), share of upward revisions to the forecast (the share of forecasters revising their forecast to a larger increase or a smaller decrease in the rate), and share of downward revisions to the forecast (the share of forecasters revising their forecast to a smaller increase or a larger decrease in the rate). We find that our market-based and survey-based measures show similar dynamics. Furthermore, while the range of forecast and the implied volatility capture uncertainty in general,

our measures of uncertainty based on revisions to the forecast allows us to distinguish the direction of uncertainty. On MMF characteristics, we use two distinct datasets. The N-MFP dataset is a monthly dataset and includes the entire MMF universe. iMoneyNet is a weekly dataset, but it has a smaller coverage and it does not distinguish between take-up at the Federal Reserve's overnight reverse purchase (ON RRP) facility and private repo.

First, we find that an increase in policy rate uncertainty measured either by the swaption-implied volatility or the range of forecasts is associated with a decrease in the maturity of MMF portfolio. Second, using survey-based measures of uncertainty constructed from revisions to the forecast, we find that the direction of uncertainty matters. MMF portfolio maturity is twice as sensitive to uncertainty as measured by upward revisions than to uncertainty as measured by downward revisions to the forecast of the policy rate. Finally, we look at the role of the ON RRP on MMF portfolio allocations for ON RRP-eligible counterparties. We look at the daily liquid asset (DLA) holdings which include ON RRP and other instruments that can readily be converted to cash within one business day. We find that overall, an increase in uncertainty is associated with an increase DLA as a share of AUM, consistent with our findings on the maturity of the portfolio. We also distinguish between ON RRP and DLA excluding ON RRP. The effect of an increase in policy rate uncertainty on ON RRP as a share of AUM fully captures the increase in MMF demand for short term assets when uncertainty increase. Conversely, when looking at DLA excluding ON RRP, the effect of policy rate uncertainty on these holdings reflect both demand and supply effects as the providers of these instruments would be likely responding to policy rate uncertainty. We find that when policy rate uncertainty increases, ON RRP-eligible funds shift their portfolio composition away from other DLA into ON RRP. This suggests that when policy rate uncertainty increases, the ON RRP facility helps ease upward pressure on demand in short-term funding markets at a time when the supply in such markets is likely to experience downward pressure, thus smoothing rate fluctuations in these markets. Furthermore, as the ON RRP is one of the liabilities in the

Fed's balance sheet, these findings imply that changes in the policy rate uncertainty affect the composition of the Federal Reserve's balance sheet.

Broadly, the literature looking at MMF portfolio allocations and monetary policy often focuses on the policy rate itself. For example, Chodorow-Reich (2014) and Di Maggio and Kacperczyk (2017) specifically looked at how the low interest rate environment affected portfolios. They find that MMF reach for yield in order to retain their investors by giving non-negative net yields after fees. Xiao (2019) found that during periods of monetary policy tightening, MMF are able to attract more deposits, which allowed them to increase lending to the wider shadow banking sector. The paper closest to ours is Im, Li, and Wang (2023). They use swaption-implied volatility as a measure of interest rate uncertainty and also find that an increase in interest rate uncertainty is associated with a decrease in portfolio maturity. However, our paper differs from their paper along two key dimensions. First, using survey-based measures, we show that the direction of uncertainty matters. Second, while their paper looks at aggregate measures of portfolio duration, we also explore the role of the ON RRP.

This paper is organized as follows. Section 2 discusses measures of uncertainty in the literature and the measures we use in our paper. Section 3 describes the data. Section 4 presents our empirical strategy and discusses the results. Section 5 concludes.

2   Measuring uncertainty

We use two types of measures of policy rate uncertainty: 1) market-based measures and 2) survey-based measures.[1]

Our market-based measure of policy rate uncertainty is based on the implied volatility from

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1. Uncertainty measures can be categorized into three groups: news-based, market-based, and survey-based. News based measures rely on textual analysis of news articles. Baker, Bloom, and Davis (2016) constructs an index based on the frequency of certain terms in major newspapers. Husted, Rogers, and Sun (2020) used a similar approach, but focused on monetary policy specifically, rather than all economic policy. Cascaldi-Garcia et al. (2023) provides a comprehensive survey of measures of uncertainty.

derivatives on the policy rate. These types of measures are widely used in the literature. For example Dahlhaus and Sekhposyan (2018) use the realized volatility of the six months ahead Federal Funds futures as a measure of monetary policy uncertainty; Chang and Feunou (2013) use both the realized and implied volatility of futures on the 3-month Canadian dealer offered rate as the Bank of Canada's policy uncertainty measure; Bauer, Lakdawala, and Mueller (2021) use the implied conditional variance of Eurodollar options as a measure of uncertainty.

Our survey-based measure of policy rate uncertainty is based on the Blue Chip Financial Forecasts of the FFR with the range of the forecast as an intuitive proxy for uncertainty. For example, Doehr and García (2021) calculate uncertainty as the difference between the 90th and 10th percentile of the expected 3-month Treasury bill yield. We use the near term forecast for each month, which is the first projection quarter's forecast, and construct the following measures in policy rate uncertainty: 1) range of forecasts for the FFR for the projection's quarter forecast across all the forecasters; 2) share of respondents making an upward revision to their forecast to the total number of respondents; 3) share of respondents making a downward revision to their forecast to the total number of respondents. An upward revision means that the forecaster expects the policy rate either to increase by more or decrease by less than they had previously expected. Similarly, a downward revision means that the forecaster expects the policy rate either to decrease by more or increase by less than they had previously expected. That is, an upward (or a downward) revision does not necessarily correspond to an increasing (or decreasing) interest rate environment. Table 1 provides summary statistics for each of these three measures and the implied volatility measure. Table 2 shows the mean of each of three survey-based measures by sub-periods based on the policy rate environment. While during periods of interests rate easing, the share of downward revisions to the forecast is higher than the share of upward revisions to the forecast, both types of revisions are present across policy rate environments. As shown in Figure 1, the forecast range and the implied volatility measures of uncertainty show similar dynamics. However, our three measures

of uncertainty based on the Blue Chip survey have advantages relative the market based implied volatility measures as they allows us to capture uncertainty across different directions.

3   Data

We use two distinct data sources for MMF portfolio characteristics: the SEC's form N-MFP data and iMoneyNet's MMF data.[2] We use two types of measures of policy uncertainty: a market- based measure from ICAP's swaption-implied volatility, and survey-based measures that we construct for the Blue Chip Financial Forecast Survey responses.[3] The N-MFP data sets provide monthly MMF level data on weighted average maturities (WAM) of portfolios, assets under management (AUM), fund type, usage of the Fed's RRP facilities, etc. In our analysis, we aggregate the data groups based on the fund family level distinguishing between subsets of fund types (e.g. government, prime) and ON RRP-eligible and ON RRP non-eligible within each fund family. For example, if a fund family had 3 prime ON RRP non-eligible funds for one month, all 3 would be consolidated into one entity for that month. WAMs for each of these entities are calculated by taking the weighted average of each fund's WAM, weighted by AUM. Tables 3 and 4 show summary statistics for the relevant variables at the fund and group level, respectively.

The iMoneyNet data provides weekly MMF level data on WAMs, AUM, and fund type as of Tuesday. Same as with the N-MFP data, individual money market funds are aggregated to groups at the family-fund, type, and RRP eligibility level. While iMoneyNet provides us with more frequent data compared to the N-MFP data, it does not provide as detailed data on each fund's portfolio. As such, we are unable to extract out a fund's usage of the Fed's RRP facility. Additionally, iMoneyNet covers a smaller part of the MMF universe with 331 funds included in

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2. SEC's form N-MFP data: https://www.sec.gov/dera/data/form-nmfp-data-sets.
    iMoneyNet: iMoneyNet, Inc., iMoneyNet Bulk Data - Offshore Analyzer and Gold Analyzer.
3. ICAP: TP ICAP. Swaptions and Interest Rate Caps and Floors Data.
    Blue Chip: Wolters Kluwer, Blue Chip Financial Forecasts. Wolters Kluwer, https://www.wolterskluwer.com/en/solutions/blue-chip.

the iMoneyNet data compared to 776 in the N-MFP data. However, funds included in iMoneyNet are typically larger funds, so in terms of AUM, about 80% of AUM reported in the N-MFP is also being reported to iMoneyNet. Tables 5 and 6 show summary statistics for the relevant variables at the fund and group level, respectively. We use mapping by Bostrom (2025) to identify ON RRP eligible counterparties in the money funds datasets.[4]

For market-based measures of uncertainty we use the swaption-implied volatility of the one-year swap rate at a horizon six month ahead. Data is daily. We use the average of the last 5 days in the corresponding month to align with both the Blue Chip Survey data and the N-MFP data. We provide more details on the data timing below. For the weekly iMoneyNet data, we use the volatility of the day the MMF data was reported.

For survey-based measures of uncertainty we use the Blue Chip Financial Forecasts of the FFR to construct measures of policy rate uncertainty based on dispersion of and revisions to the FFR forecast. The survey is at a monthly frequency. Each month's FFR forecast has on average 44 forecasters. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. For example, the February survey is based on survey data collected during the last few days of January. N-MFP data for any month are as of the last day of that month. Hence, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data.

By combining the MMF portfolio characteristics data and the policy uncertainty data, we construct a panel data set spanning from November 2010 to December 2024.

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4. The list of eligible ON RRP counterparties is from the Federal Reserve Bank of New York's (FRBNY) website is found in https://www.newyorkfed.org/markets/rrp_counterparties.

4 Empirical Strategy and Results

The first two parts of this section discuss the effect of policy rate uncertainty on MMF portfolio maturity and whether the direction of uncertainty matters. The third part looks at how ON RRP eligible counterparties adjust their portfolio allocations, distinguishing between their ON RRP holdings and their holdings of other daily liquid assets.

4.1 Does policy rate uncertainty affect MMF portfolio maturity?

Figure 2 and Figure 3 plot the two measures of policy rate uncertainty - the survey-based FFR forecast range and the market-based implied volatility, respectively - and the weighted average portfolio maturity (WAM) from N-MFP form fillings and iMoneyNet for the period between November 2010 to December 2024. Overall we see a negative relationship between policy rate uncertainty and the MMFs portfolio maturity. Note that policy uncertainty was low and little changed during the zero lower bound, but it did start to increase in 2015 even before the first policy rate increase out of the zero lower bound in December 2015. An argument for this negative correlation could be that shorter WAMs allow MMF to promptly change their portfolio allocations once the uncertainty about the path of the interest rate decreases.

To test this hypothesis, we estimate a panel regression specification as in (1):

$$
\begin{aligned}
WAM_{i,t} = \beta_0 &+ \beta_1 Uncertainty_t + \beta_2 DaysTillFOMC_t + \beta_3 (Uncertainty_t \times DaysTillFOMC_t) \\
&+ \beta_4 (Uncertainty_t \times RRPstart_t \times RRPelig_{i,t}) + \beta_5 (RRPstart_t \times RRPelig_{i,t}) \\
&+ \beta_6 RRPstart_t + \beta_7 AUM_{i,t} + \beta_8 NetTbillIssuance_t \\
&+ \beta_9 MMFreform_t + \beta_{10} (prime_i \times MMFreform_t) + \alpha_i + \epsilon_{i,t}
\end{aligned}
$$

(1)

where $Uncertainty_t$ is one of the following two measures of policy rate uncertainty: 1) forecast range from the FFR forecast in the Blue Chips survey; 2) swaption implied volatility. Since swaption data is daily, we use the average of the last 5 days of the month to align with both the Blue Chip

Survey data and the N-MFP data. $DaysTillFOMC_t$ is the number of days from month-end t to the second day of the next FOMC meeting. $RRPstart_t$ is equal to 1 if t is after the start of the RRP operations (September 23, 2013), 0 otherwise. $RRPelig_{i,t}$ is equal to 1 if entity i is an ON RRP eligible counterparty on month-end t, 0 otherwise. $prime_i$ is equal to 1 if entity i is a prime fund, 0 otherwise. $MMFreform_t$ is equal to 1 if month-end t is after the SEC adopted the 2014-2016 MMF reforms (July 23, 2014), 0 otherwise[5]. $NetTbillIssuance_t$ is net Treasury bills issuance[6] and controls for the supply of investment alternatives for MMF (Treasury bills directly and repo, indirectly). We also include fund group fixed effects α_i. The data is monthly for the period November 2010 to December 2024.

Tables 7 and 8 show the regression results when using the forecast range measure and the implied volatility measure, respectively. An increase in policy rate uncertainty is associated with a decrease in MMF WAM. This result is statistically robust across the two measures of policy rate uncertainty and across different specifications within each measure of uncertainty. The economic significance of the results is about the same. To illustrate, using specification (1) in Tables 7 and 8, a one standard deviation increase in uncertainty is associated on average with a 3.5 day or a 3.9 day decrease in WAMs respectively.

Furthermore, the sensitivity of WAMs to policy rate uncertainty varies within the FOMC intermeeting period. As expected, the closer to the FOMC meeting (the closer in time to a possible change in the policy rate) the shorter the WAMs to allow MMF to adjust their portfolio accordingly. This result is robust across these two measures of policy rate uncertainty and across regression specifications.

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5. In 2014, the Securities and Exchange Commission (SEC) adopted a series of amendments to Rule 2a-7 aimed at making MMF less susceptible to runs. These amendments were enacted in 2016 and contained two major reforms. One was switching from a stable to floating NAV for prime institutional MMF. The other allowed all non-government MMF to impose liquidity fees and redemption gates when facing a run. Gissler, Macchiavelli, and Narajabad (2023) and Sundaresan and Xiao (2018) find that the regulation reform caused MMF to shift their portfolios towards Federal Home Loan Bank notes. Baghai, Giannetti, and Jäger (2022) found prime MMF had a more performance sensitive investor base after the reform, causing them to reach for the yield and invest in riskier assets.

6. U.S. Treasury debt issuance data: https://fiscaldata.treasury.gov/datasets/treasury-securities-auctions-data/treasury-securities-auctions-data

We also estimates this regression using weekly MMF data from iMoneyNet and implied volatility as our measure of policy rate uncertainty. The results are shown in Table 9 and they are consistent with the results from the monthly N-MFP datasets. Furthermore, the effect of uncertainty on WAMs is about the same in the monthly and weekly data suggesting that MMF adjust the maturity of their portfolio within a week in response to changes in policy rate uncertainty.

4.2   Does the direction of policy rate uncertainty matter?

We estimate the regression specification in (1) where $Uncertainty_t$ is constructed based on revisions to the forecast (share of upward revisions, share of downward revisions) from the FFR forecast in the Blue Chips survey.

Tables 10 and 11 show the regression results using these two measures of uncertainty. An increase in policy rate uncertainty based on forecast revisions is associated with a decrease in MMF WAMs, similar to our findings when using the forecast range and swaption implied volatility as measures of policy rate uncertainty.

However, the direction of uncertainty matters. First, looking at the estimated coefficient for uncertainty, we find MMF portfolio maturity is twice more sensitive to uncertainty related to upward revisions than to downward revisions to the forecast of the policy rate.[7] Second, looking at the estimated coefficient for the interaction of the policy rate uncertainty and days till the FOMC meeting, we find different results depending on the measure of policy rate uncertainty. Specifically, we find the effect of the distance from the FOMC meeting on WAMs increasing with the increase in the share of downward revisions, but we find no statistically significant relationship when rate uncertainty is measured by the share of upward revisions to the forecast. A possible explanation is that, as shown in Table 2, downward revisions are more prevalent than upward revisions to the forecast during periods of policy rate easing. In a decreasing policy rate environment, if the revised

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7. Note that as shown in Table 1, the $FFRup$ and $FFRdown$ series have about the same standard deviation, so we can compare the estimated coefficients directly.

expectations are for a larger decrease in the interest rate than previously expected (that is the share of downward revisions increases), it would be more profitable for the MMF to maintain a longer WAM the further away for the FOMC meeting to lock in the higher rates.

4.3 How do RRP-eligible MMF adjust their portfolio allocations?

The Federal Reserve uses an overnight reverse repurchase agreement (ON RRP) facility as needed as a supplementary policy tool to help control the federal funds rate and keep it in the target range set by the FOMC. [8] When the Federal Reserve conducts an overnight RRP, it sells a security to an eligible counterparty and simultaneously agrees to buy the security back the next day.[9] The ON RRP facility supports setting a floor on money market rates by providing a fixed rate on safe overnight investments to eligible MMF, government-sponsored enterprises (GSEs), and other entities that are ineligible to earn interest on reserve balances (IORB). The ON RRP offering rate (the maximum interest rate that the Federal Reserve is willing to pay on ON RRP operations) plays a role for ON RRP counterparties that is similar to the role played by the interest rate on excess reserves for depository institutions. That is, in general, any counterparty that can use the ON RRP facility should be unwilling to invest funds overnight with another counterparty at a rate below the ON RRP rate, just as any depository institution eligible to earn interest on reserves should be unwilling to invest funds overnight with another counterparty at a rate below the IORB. The Federal Reserve conducts ON RRP operations with many counterparties, covering a wide range of entities.[10]

MMF are the main participants at the Fed's ON RRP operations (Figure 4). Furthermore,

Figure 5 suggests that an increase in policy rate uncertainty, measured by the range of forecasts for the FFR, is associated with an increase in the share MMFs take-up at the ON RRP facility relative to their AUM. This is not surprising as ON RRP is the shortest maturity (overnight) and we established in the previous section that an increase in uncertainty is associated with a decrease in MMFs portfolio maturity. ON RRP is also one of the instruments included in Daily Liquid Assets (DLA). Broadly speaking, DLA include cash or securities that can readily be converted to cash within one business day.[11] Table 12 provides summary statistics of MMF holdings across different categories within DLA. For non eligible funds, DLA consist mostly of Treasury securities with private repo coming in second, while for eligible funds, DLA is on average more uniformly spread across different categories. Furthermore, looking at measures of dispersion, such as the standard deviation or the difference between the 95th and the 5th percentile, the composition of DLA is relatively stable for non eligible funds, while it varies relatively more for eligible funds. This suggests that eligible funds overall adjust their portfolio more than non eligible funds.

We explore the role of the ON RRP on how RRP eligible funds adjust their portfolio allocations by breaking down DLA into two parts: 1) ON RRP, 2) DLA excluding ON RRP. We then estimate the sensitivity of the these two components to policy rate uncertainty as shown in specification (2).

$$
\begin{aligned}
(Component/AUM)_{i,t} = \beta_0 &+ \beta_1 Uncertainty_t + \beta_2 DaysTillFOMC_t \\
&+ \beta_3 (Uncertainty_t \times DaysTillFOMC_t) \\
&+ \beta_4 AUM_{i,t} + \beta_5 NetTbillIssuance_t \\
&+ \beta_6 MinDLAincrease_t + \alpha_i + \epsilon_{i,t}
\end{aligned}
\tag{2}
$$

where $Component$ is one of the following: DLA, RRP, $DLAexclRRP$. $Uncertainty$ is one of the following survey-based measures of policy rate uncertainty: $FFRrange$, $FFRup$, $FFRdown$. $MinDLAincrease_t$ is a dummy variable, equal to 1 for the period after the minimum requirement

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11. MMF are are subject to minimum requirements about their DLA as a share their assets. Effective October 2, 2023, the minimum requirement for DLA as a share of assets increased from 10% to 25% of total assets. See https://www.sec.gov/files/rules/final/2023/33-11211.pdf.

for DLA as a share of assets was increased to 25% (October 2023). Other variables are defined as in regression (1) in the previous section. Data is at a monthly frequency for the period April 2016 (the first month N-MFP filings required DLA reporting) to December 2024.

This breakdown allows us to capture the clean effect of policy rate uncertainty on demand for short-term assets. The estimated effect of policy rate uncertainty on ON RRP holdings provides a clean capture of changes in MMF demand for short-term assets in response to changes in policy rate uncertainty as MMF can participate up to their counterparty limit at the ON RRP offering rate.[12] Conversely, when looking at DLA excluding ON RRP, the effect of policy rate uncertainty on these holdings reflect both demand and supply effects as the providers of these instruments would likely be responding to policy rate uncertainty as well. In addition, looking at the private repo, which is the closest alternative to ON RRP, MMF could face constraints when trying to increase their repo holdings. For example, they might have counterparty constraints which limit their repo exposure to a specific counterparty. Or their counterparties might limit their offerings of repo based on their own counterparty limits.

Regression results are shown in Tables 13, 14, 15 for each of the three survey-based measures of policy rate uncertainty: range of forecast, share of upward revisions to the forecast, and share of downward revisions to the forecast, respectively. Looking at column 1, we find a strong positive relationship between uncertainty and DLA/AUM. This is consistent with our results in the previous section that an increase in uncertainty is associated with a decrease in the maturity of the portfolio.[13] Looking and columns 2 and 3, we find that changes in policy rate uncertainty are associated with opposite effects on $ONRRP/AUM$ and $DLAexclONRRP/AUM$. Specifically, looking at column 2, we find a strong positive relationship between policy rate uncertainty and $ONRRP/AUM$ across the three measures of policy rate uncertainty. As discussed above, this

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12. While there are both counterparty caps and aggregate caps, the caps are unlikely to be binding. For operational details, see https://www.newyorkfed.org/markets/opolicy/operating_policy_151216.html.

13. When uncertainty is measured as share of downward revisions, we do not find evidence of a relationship between DLA/AUM and uncertainty. This suggest that, in this case, the negative relationship between portfolio maturity we found in the previous section could be driven my adjustment portfolio holdings beyond the daily liquid asset.

estimate fully reflects the increase in MMF demand for liquid assets when policy rate uncertainty increases. Looking at column 3, we find the opposite effect: a negative relationship between DLA excluding ON RRP as a share of AUM and policy rate uncertainty.

These findings suggests that the ON RRP facility also helps ease fluctuations in demand in short term funding market. For example, when policy rate uncertainty increases, eligible MMF move away from other DLA into RRP. This move eases upward pressure on demand for short-term investments by eligible funds at a time when demand by other participants for such investments increases and supply of such investment decreases. As a result, this smaller upward pressure on total demand combined with a decrease in supply results in a smaller increase in the price of these asset smoothing fluctuations the market for short-term investments.

Another area where we see opposite effect on the two parts of DLA ($DLAexclRRP$ and $ONRRP$) relates to the 2023 increase in the minimum requirement for DLA. We find that the 2023 increase in the minimum requirement for DLA as a share of AUM is associated with an increase $DLAexclRRP/AUM$ and a decrease in $ONRRP/AUM$. A plausible explanation is that as changes in regulation are more of a permanent nature, MMF are likely to respond to the increase in minimum requirements for DLA by increasing the share of their DLA instruments which are part of their long term portfolio strategy, while the ON RRP provides an alternative investment when more attractive rates are not available.

5   Conclusion

This paper provides insights into MMF allocations in very short-term assets in general and the ON RRP in particular in response to uncertainty about the monetary policy rate. We find that an increase in policy rate uncertainty is associated with an increase in MMFs holdings of overnight RRP. This move eases upward pressure on demand for short-term investments and smooth fluctuations in short-term funding market. Furthermore, this increase in ON RRP affects the composition

of the Fed's balance sheet and could have implications for monetary policy decisions related to the

Fed's balance sheet.

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Table 1: Summary Statistics - Measures of policy rate uncertainty

Statistic	Num of Obs	Mean	St. Dev.	Min	Median	Max
FFR Range (p.p.)	170	0.356	0.333	0.000	0.245	2.500
FFR Down	170	0.161	0.154	0.000	0.126	1.000
FFR Up	170	0.146	0.158	0.000	0.104	0.923
Implied Volatility	167	59.6	39.3	11.5	47.2	184.1

Note: FFR Range is the range of respondents' Federal Funds Rate (FFR) forecast. FFR Down is the share of respondents who revised their FFR forecast downwards from the prior month's survey. FFR Up is the share of respondents who revised their FFR forecast upwards from the prior month's forecast. Implied volatility is the swaption-implied volatility of one-year swap rate at a horizon of six months ahead. We use the average of the last 5 days in the corresponding month to align with both the Blue Chip Survey data and the N-MFP data. Survey data is from Wolters Kluwer's monthly Blue Chip Financial Forecasts. Swaption data is from ICAP. Data is for the period November 2010 to December 2024.

Table 2: Measures of policy rate uncertainty: mean by sub-periods based on the policy rate environment

Sub-periods	N	FFR Range (p.p.)	FFR Up	FFR Down
ZLB 1 (10/2010-11/2015)	61	0.192	0.093	0.187
Tightening 1 (12/2015- 7/2019)	44	0.357	0.180	0.177
Easing 1 (08/2019-02/2020)	7	0.557	0.150	0.256
ZLB 2 (03/2020-02/2022)	24	0.142	0.061	0.054
Tightening 2 (03/2022-08/2024)	30	0.720	0.273	0.125
Easing 2 (09/2024-12/2024)	4	1.05	0.124	0.328

Note: The sub-periods are defined by the path of the midpoint of the target range for fed funds rate (FFR). *ZLB* refers to when the midpoint was at the zero lower bound (ZLB), *Tightening* refers to when the midpoint was increasing or held constant following a prior increase, and *Easing* refers to when midpoint was decreasing or held constant following a prior decrease. Target range for the fed funds rate: https://www.federalreserve.gov/economy-at-a-glance-policy-rate.htm. Fed funds' forecast data is from Wolters Kluwer's monthly Blue Chip Financial Forecasts spanning between November 2010 to December 2024. FFR Range is the range of respondents' Federal Funds Rate (FFR) forecast. FFR Up is the share of respondents who revised their FFR forecast upwards from the prior month's forecast. FFR Down is the share of respondents who revised their FFR forecast downwards from the prior month's survey.

Table 3: N-MFP Summary Statistics - At the fund level

Statistic	N Obs	N Funds	Mean	St. Dev.	5th pct	Median	95th pct
WAM (Days)	71914	776	32.463	14.641	6	34	54
AUM ($ Billions)	71914	776	8.568	24.523	0.041	1.097	38.285
RRP Takeup ($ Billions)	13170	157	4.867	14.599	0	0.01	26.332
DLA/AUM	33806	535	0.438	0.302	0	0.396	0.979
RRP Takeup/AUM	13148	157	0.105	0.171	0	0.001	0.501

Note: Data is from monthly N-MFP form filings spanning between November 2010 to December 2024. Each entry is at the fund-month level. WAM is the weighted average maturity of the fund's portfolio. AUM is the assets under management for the fund. RRP Takeup is the amount of takeup the fund has at the Fed's ON RRP facility (ON RRP operations began September 2013). DLA/AUM is the fund's daily liquid assets as a share of assets under management (N-MFP filings include DLA reporting starting April 2016). RRP Takeup/AUM is the fund's ON RRP takeup as a share of assets under management.

Table 4: N-MFP Summary Statistics - At the group level

Statistic	N Obs	N Groups	Mean	St. Dev.	5th pct	Median	95th pct
WAM (Days)	31317	435	32.834	14.054	7	34	53
AUM ($ Billions)	31317	435	20.473	55.859	0.099	2.254	102.457
RRP Takeup ($ Billions)	6572	87	8.047	29.329	0	0	40.522
DLA/AUM	16570	271	0.468	0.28	0.022	0.424	0.972
RRP Takeup/AUM	6572	87	0.084	0.149	0	0	0.445

Note: Data is from monthly N-MFP form filings spanning between November 2010 to December 2024. Individual money market funds are aggregated to groups at the family-fund, type, and RRP eligibility level. For example, if a fund family had 3 prime non-RRP eligible funds for one month, all 3 would be consolidated into one entity. WAM is the weighted average maturity of the entity's portfolio. AUM is the assets under management for the entity. RRP Takeup is the amount of takeup the entity has at the Fed's ON RRP facility. DLA/AUM is the entity's daily liquid assets as a share of assets under management (N-MFP filings include DLA reporting starting April 2016). RRP Takeup/AUM is the entity's ON RRP takeup as a share of assets under management.

Table 5: iMoneyNet Summary Statistics - At the fund level

Statistic	N Obs	N Funds	Mean	St. Dev.	5th pct	Median	95th pct
WAM (Days)	210511	331	33.103	14.008	8	34	54
AUM ($ Billions)	210511	331	11.81	30.176	0.096	1.769	59.928

Note: Data is from weekly iMoneyNet dataset on MMF spanning between November 2010 to December 2024. Each entry is at the fund-week level. WAM is the weighted average maturity of the fund's portfolio. AUM is the assets under management for the fund.

Table 6: iMoneyNet Summary Statistics - At the group level

Statistic	N Obs	N Groups	Mean	St. Dev.	5th pct	Median	95th pct
WAM (Days)	75773	158	34.6	12.84	11	36	53
AUM ($ Billions)	75773	158	31.81	70.446	0.194	4.351	150.803

Note: Data is from weekly iMoneyNet dataset on MMF spanning between November 2010 to December 2024. Individual money market funds are aggregated to groups at the family-fund, type, and RRP eligibility level. For example, if a fund family had 3 prime non-RRP eligible funds for one month, all 3 would be consolidated into one entity. WAM is the weighted average maturity of the entity's portfolio. AUM is the assets under management for the entity.

Table 7: MMF portfolio maturity and policy rate uncertainty (forecast range). Monthly frequency.

VARIABLES	(1) WAM	(2) WAM	(3) WAM
F.FFRrange	-10.67***	-9.023***	-8.187***
	(0.425)	(0.402)	(0.519)
DaysTillFOMC		0.0690***	0.0663***
		(0.00493)	(0.00468)
F.FFRrange*DaysTillFOMC		-0.0760***	-0.0745***
		(0.0103)	(0.0101)
F.FFRrange*RRPelig*RRPstart			-2.636***
			(0.825)
RRPstart			1.012**
			(0.504)
AUM	0.000200	0.000630	0.00277
	(0.0106)	(0.0105)	(0.0108)
NetTreasuryBillIssuance	-0.000357	-4.99e-05	-7.04e-05
	(0.000476)	(0.000483)	(0.000483)
MMFreform	-4.382***	-4.265***	-5.135***
	(0.910)	(0.908)	(0.895)
TypePrime*MMFreform	-0.875	-0.899	-0.778
	(1.220)	(1.217)	(1.215)
Constant	39.44***	37.62***	37.40***
	(0.516)	(0.516)	(0.565)
Observations	30,555	30,555	30,555
R-squared	0.149	0.154	0.156
Number of group_id	431	431	431

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. WAM is the weighted average maturity of the portfolio of MMF group i at time t. $F.FFRrange$ is the range of the forecast for the fed funds rate for the first projection's quarter forecast across the forecasters in the Blue Chip Financial Forecasts at time $t+1$. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $RRPstart$, $RRPelig$, $TypePrime$, $MMFreform$ are dummy variables equal to 1 if after the establishment of the Fed's ON RRP facility, RRP eligible, a prime fund, after the 2014-2016 MMF reform was approved (July 2014), respectively. AUM is assets under management. $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period November 2010 to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 8: MMF portfolio maturity and policy rate uncertainty (implied volatility). Monthly frequency.

VARIABLES	(1) WAM	(2) WAM	(3) WAM
ImplVol	-0.0986***	-0.101***	-0.0917***
	(0.00520)	(0.00585)	(0.00691)
DaysTillFOMC		0.0229***	0.0232***
		(0.00511)	(0.00464)
ImplVol*DaysTillFOMC		0.000178***	0.000173***
		(6.75e-05)	(6.42e-05)
ImplVol*RRPelig*RRPstart			-0.0296***
			(0.0101)
RRPstart			-0.0564
			(0.532)
AUM	0.0105	0.0109	0.0140
	(0.0115)	(0.0115)	(0.0118)
NetTreasuryBillIssuance	0.000252	0.000423	0.000422
	(0.000466)	(0.000456)	(0.000456)
MMFreform	-4.270***	-4.371***	-4.452***
	(0.911)	(0.912)	(0.902)
TypePrime*MMFreform	-0.813	-0.822	-0.716
	(1.228)	(1.228)	(1.226)
Constant	41.01***	40.36***	40.27***
	(0.585)	(0.626)	(0.666)
Observations	30,240	30,627	30,627
R-squared	0.156	0.156	0.158
Number of group_id	433	435	435

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. WAM is the weighted average maturity of the portfolio of MMF group i at time t. $ImplVol$ is the swaption-implied volatility of the one-year swap rate at a horizon of six months ahead. We use the average of the last 5 days in the corresponding month to align with both the Blue Chip Survey data and the N-MFP data. $DaysTillFOMC$ is the number of days from t to day 2 of the next FOMC meeting. $RRPstart$, $RRPelig$, $TypePrime$, $MMFreform$ are dummy variables equal to 1 if after the establishment of the Fed's ON RRP facility, RRP eligible, a prime fund, after the 2014-2016 MMF reform was approved (July 2014), respectively. AUM is assets under management. $groups$ are at the MMF family-fund type-ON RRP eligibility level. Data is at a monthly frequency for the period November 2010 to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 9: MMF portfolio maturity and policy rate uncertainty (implied volatility). Weekly frequency.

VARIABLES	(1) WAM	(2) WAM	(3) WAM
ImplVol	-0.0988***	-0.0991***	-0.0908***
	(0.00600)	(0.00597)	(0.00724)
DaysTillFOMC		0.00142	0.00143
		(0.00218)	(0.00219)
ImplVol*DaysTillFOMC		1.49e-05	1.38e-05
		(2.77e-05)	(2.76e-05)
ImplVol*RRPelig*RRPstart			-0.0286**
			(0.0128)
RRPstart			-0.133
			(0.801)
AUM	0.00159	0.00159	0.00469
	(0.00941)	(0.00941)	(0.00956)
NetTreasuryBillIssuance	0.000482	0.000451	0.000371
	(0.00175)	(0.00175)	(0.00175)
MMFreform	-5.878***	-5.875***	-5.921***
	(1.265)	(1.265)	(1.245)
TypePrime*MMFreform	-0.951	-0.951	-0.852
	(1.785)	(1.785)	(1.781)
Constant	45.12***	45.09***	45.09***
	(0.874)	(0.876)	(0.954)
Observations	73,673	73,673	73,673
R-squared	0.204	0.204	0.206
Number of group_id	158	158	158

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from iMoneyNet. WAM is the weighted average maturity of the portfolio of MMF group i at time t. $ImplVol$ is the swaption-implied volatility of the one-year swap rate at a horizon of six months ahead. We use the average of the last 5 days in the corresponding month to align with both the Blue Chip Survey data and the N-MFP data. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $RRPstart$, $RRPelig$, $TypePrime$, $MMFreform$ are dummy variables equal to 1 if after the establishment of the Fed's ON RRP facility, RRP eligible, a prime fund, after the 2014-2016 MMF reform was approved (July 2014), respectively. AUM is assets under management. $groups$ are at the MMF family-fund type-ON RRP eligibility level. Data is at a weekly frequency for the period November 2010 to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 10: MMF portfolio maturity and policy rate uncertainty (upward revisions to the forecast). Monthly frequency.

VARIABLES	(1) WAM	(2) WAM	(3) WAM
F.FFRup	-13.20***	-11.94***	-10.10***
	(0.740)	(0.980)	(1.086)
DaysTillFOMC		0.0460***	0.0447***
		(0.00485)	(0.00460)
F.FFRup*DaysTillFOMC		-0.0365	-0.0347
		(0.0233)	(0.0229)
F.FFRup*RRPelig*RRPstart			-6.057***
			(1.631)
RRPstart			0.684
			(0.510)
AUM	-0.00464	-0.00438	-0.00328
	(0.0105)	(0.0105)	(0.0106)
NetTreasuryBillIssuance	-0.000699	-0.000282	-0.000344
	(0.000484)	(0.000490)	(0.000487)
MMFreform	-5.766***	-5.753***	-6.320***
	(0.916)	(0.914)	(0.901)
TypePrime*MMFreform	-0.847	-0.868	-0.782
	(1.233)	(1.231)	(1.229)
Constant	38.81***	37.52***	37.33***
	(0.513)	(0.530)	(0.584)
Observations	30,555	30,555	30,555
R-squared	0.099	0.102	0.104
Number of group_id	431	431	431

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. WAM is the weighted average maturity of the portfolio of MMF group i at time t. $F.FFRup$ is the number of forecasters making an upward revision to the forecast for the fed funds rate for the first projection's quarter forecast in the Blue Chip Financial Forecasts at time $t+1$ divided by the total number of forecasters. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $RRPstart$, $RRPelig$, $TypePrime$, $MMFreform$ are dummy variables equal to 1 if after the establishment of the RRP, RRP eligible, a prime fund, after the 2014-2016 MMF reform was approved (July 2014), respectively. AUM is assets under management. $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period November 2010 to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 11: MMF portfolio maturity and policy rate uncertainty (downward revisions to the forecast). Monthly frequency.

VARIABLES	(1) WAM	(2) WAM	(3) WAM
F.FFRdown	-1.334*	-5.413***	-5.734***
	(0.706)	(1.052)	(1.134)
DaysTillFOMC		0.0356***	0.0319***
		(0.00568)	(0.00548)
F.FFRdown*DaysTillFOMC		0.118***	0.126***
		(0.0296)	(0.0293)
F.FFRdown*RRPelig*RRPstart			0.100
			(1.422)
RRPstart			1.146**
			(0.517)
AUM	-0.00547	-0.00515	-0.00414
	(0.0107)	(0.0107)	(0.0110)
NetTreasuryBillIssuance	-0.000697	3.99e-06	1.20e-05
	(0.000485)	(0.000494)	(0.000494)
MMFreform	-6.481***	-6.467***	-7.302***
	(0.925)	(0.924)	(0.913)
TypePrime*MMFreform	-0.690	-0.705	-0.642
	(1.243)	(1.241)	(1.239)
Constant	37.65***	36.80***	36.58***
	(0.512)	(0.535)	(0.581)
Observations	30,555	30,555	30,555
R-squared	0.064	0.070	0.070
Number of group_id	431	431	431

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. WAM is the weighted average maturity of the portfolio of MMF group i at time t. $F.FFRdown$ is the number of forecasters making a downward revision to the forecast for the fed funds rate for the first projection's quarter forecast in the Blue Chip Financial Forecasts at time $t+1$ divided by the total number of forecasters. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $RRPstart$, $RRPelig$, $TypePrime$, $MMFreform$ are dummy variables equal to 1 if after the establishment of the RRP, RRP eligible, a prime fund, after the 2014-2016 MMF reform was approved (July 2014), respectively. AUM is assets under management. $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period November 2010 to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 12: Summary statistics on the share of each category within the Daily Liquid Asset

Panel A. Non RRP Eligible Funds							
Category	N Funds	N Months	Mean	St.Dev.	5th pct	Median	95th pct
Tsy Securities	294	105	86.621	3.976	79.382	87.068	92.098
Tsy Repo excl. ON RRP	222	105	5.66	1.957	2.614	5.996	8.42
Agency Securities Repo	181	105	3.715	1.459	1.876	3.468	6.196
Other	378	105	4.003	1.563	2.575	3.769	6.008
Panel B. RRP Eligible Funds							
Category	N Funds	N Months	Mean	St.Dev.	5th pct	Median	95th pct
Tsy Securities	141	105	41.604	14.413	17.076	40.531	71.313
ON RRP	138	105	19.764	21.121	0.021	13.373	62.018
Tsy Repo excl. ON RRP	134	105	19.745	8.653	7.720	18.001	34.303
Agency Securities Repo	110	105	12.107	4.607	5.029	11.285	19.088
Other	119	105	6.78	4.912	2.733	5.328	10.978

Note: Data is from monthly N-MFP form filings spanning between April 2016 (N-MFP filings include DLA reporting starting April 2016) to December 2024. The table shows summary statistics on the share of each category within the Daily Liquid Asset. *N Funds* is the number of funds that reported having an asset in that category at any time during that entire time period. *N Months* is the number of months any asset of that category appeared in a filing. *Tsy Securities* are any securities issued by the U.S. Treasury. *ON RRP* is takeup at the Fed's ON RRP facility. *Tsy Repo excl. ON RRP* is any repo collateralized by Treasury securities that doesn't occur at the Fed's ON RRP facility. *Agency Securities Repo* is any repo collateralized by U.S. Government Agency securities. Other is any daily liquid asset that doesn't fall into any of the above categories.

Table 13: ON RRP vs. Other daily liquid assets: policy rate uncertainty = forecast range

VARIABLES	(1) DLA/AUM	(2) ONRRP/AUM	(3) DLAexclONRRP/AUM
F.FFRrange	0.0497***	0.0964***	-0.0467***
	(0.00724)	(0.0127)	(0.0115)
DaysTillFOMC	0.000168	-0.000765***	0.000933***
	(0.000121)	(0.000126)	(0.000165)
F.FFRrange*DaysTillFOMC	-0.000401**	0.00113***	-0.00153***
	(0.000189)	(0.000208)	(0.000251)
AUM	0.000938***	0.000661***	0.000277**
	(0.000202)	(0.000191)	(0.000134)
NetTreasuryBillIssuance	-5.05e-06	-2.45e-05***	1.94e-05
	(1.03e-05)	(9.00e-06)	(1.30e-05)
MinDLAincrease	0.0669***	-0.0775***	0.144***
	(0.0201)	(0.0166)	(0.0216)
Constant	0.418***	0.00926	0.409***
	(0.0149)	(0.0154)	(0.0113)
Observations	5,038	5,038	5,038
R-squared	0.183	0.174	0.144
Number of group_id	65	65	65

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. DLA/AUM is the share of daily liquid assets (DLA) to assets under management (AUM) of MMF group i at time t. $ONRRP/AUM$ is the share of MMFs takeup at the Fed's RRP facility to AUM of MMF i at time t $F.FFRrange$ is the range of the forecast for the fed funds rate for the first projection's quarter forecast across the forecasters in the Blue Chip Financial Forecasts at time $t+1$. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $MinDLAincrease$ is a dummy variable, equal to 1 for the period after the minimum requirement for DLA as a share of assets was increased to 25% (October 2023). $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period April 2016 ((N-MFP filings include DLA reporting starting April 2016) to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 14: ON RRP vs. Other daily liquid assets: policy rate uncertainty = upward revisions to the forecast. Monthly frequency.

VARIABLES	(1) DLA/AUM	(2) ONRRP/AUM	(3) DLAexlONRRP/AUM
F.FFRup	0.0283***	0.0877***	-0.0594***
	(0.00958)	(0.0220)	(0.0219)
DaysTillFOMC	-0.000222**	-0.000990***	0.000768***
	(0.000105)	(0.000148)	(0.000160)
F.FFRup*DaysTillFOMC	0.00116***	0.00411***	-0.00295***
	(0.000403)	(0.000604)	(0.000609)
AUM	0.000964***	0.000731***	0.000234*
	(0.000204)	(0.000201)	(0.000139)
NetTreasuryBillIssuance	-3.30e-06	-2.47e-05***	2.14e-05*
	(9.94e-06)	(8.52e-06)	(1.25e-05)
MinDLAincrease	0.0723***	-0.0562***	0.128***
	(0.0206)	(0.0156)	(0.0211)
Constant	0.433***	0.0298*	0.403***
	(0.0148)	(0.0160)	(0.0103)
Observations	5,038	5,038	5,038
R-squared	0.177	0.142	0.134
Number of group_id	65	65	65

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: MMF data is from the N-MFP data sets. DLA/AUM is the share of daily liquid assets (DLA) to assets under management (AUM) of MMF group i at time t. $ONRRP/AUM$ is the share of MMFs takeup at the Fed's RRP facility to AUM of MMF i at time t $F.FFRup$ is the number of forecasters making as upward revision to the forecast for the fed funds rate for the first projection's quarter forecast in the Blue Chip Financial Forecasts at time $t+1$ divided by the total number of forecasters. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $MinDLAincrease$ is a dummy variable, equal to 1 for the period after the minimum requirement for DLA as a share of assets was increased to 25% (October 2023). $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period April 2016 (N-MFP filings include DLA reporting starting April 2016) to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.

Table 15: ON RRP vs. Other daily liquid assets: policy rate uncertainty = downward revisions to the forecast. Monthly frequency.
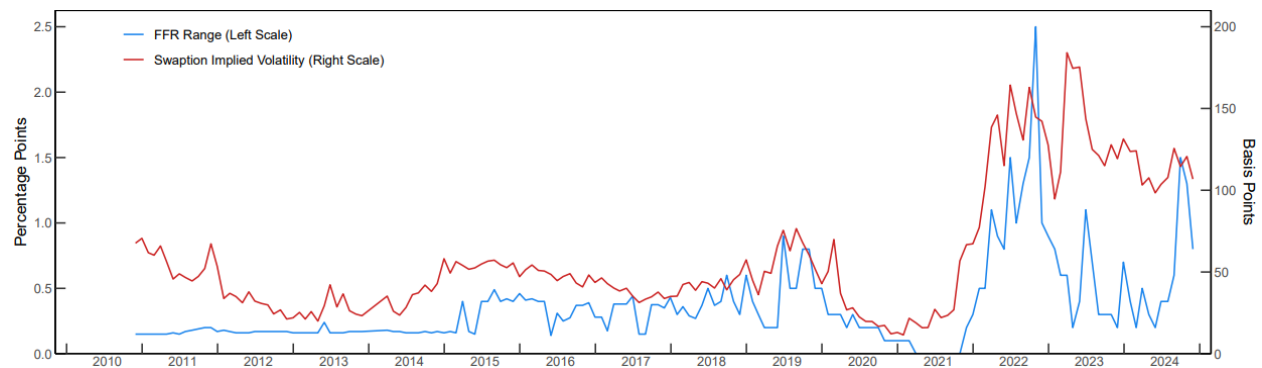
VARIABLES	(1) DLA/AUM	(2) ONRRP/AUM	(3) DLAexlONRRP/AUM
F.FFRdown	0.128***	0.361***	-0.232***
	(0.0320)	(0.0391)	(0.0458)
DaysTillFOMC	0.00105***	0.00110***	-4.15e-05
	(0.000133)	(0.000134)	(0.000151)
F.FFRdown*DaysTillFOMC	-0.00742***	-0.0116***	0.00418***
	(0.000947)	(0.00123)	(0.00117)
AUM	0.000939***	0.000742***	0.000198
	(0.000201)	(0.000204)	(0.000137)
NetTreasuryBillIssuance	-1.86e-05*	-4.96e-05***	3.10e-05**
	(1.01e-05)	(9.57e-06)	(1.31e-05)
MinDLAincrease	0.0727***	-0.0717***	0.144***
	(0.0200)	(0.0167)	(0.0215)
Constant	0.424***	0.00801	0.416***
	(0.0154)	(0.0144)	(0.0106)
Observations	5,038	5,038	5,038
R-squared	0.190	0.088	0.119
Number of group_id	65	65	65

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: MMF data is from the N-MFP data sets. DLA/AUM is the share of daily liquid assets (DLA) to assets under management (AUM) of MMF group i at time t. $ONRRP/AUM$ is the share of MMFs takeup at the Fed's RRP facility to AUM of MMF i at time t $F.FFRdown$ is the number of forecasters making a downward revision to the forecast for the fed funds rate for the first projection's quarter forecast in the Blue Chip Financial Forecasts at time $t+1$ divided by the total number of forecasters. $DaysTillFOMC$ is the number of days from month-end t to day 2 of the next FOMC meeting. $MinDLAincrease$ is a dummy variable, equal to 1 for the period after the minimum requirement for DLA as a share of assets was increased to 25% (October 2023). $groups$ are at the MMF family-fund type-ON RRP eligibility level. A note on the data timing: The Blue Chip Financial Survey for any given month is conducted during the last few days of the previous month. N-MFP data for any month are as of the last day of that month. As a result, the information set window in the N-MFP data corresponds to the information set in the one-month forward Blue Chip data. As a result, in our regression analysis, we pair the month-end N-MFP data with the one-month forward Blue Chip data. Data is at a monthly frequency for the period April 2016 (N-MFP filings include DLA reporting starting April 2016) to December 2024. The results are from panel data regression including group fixed effects and group-clustered standard errors.
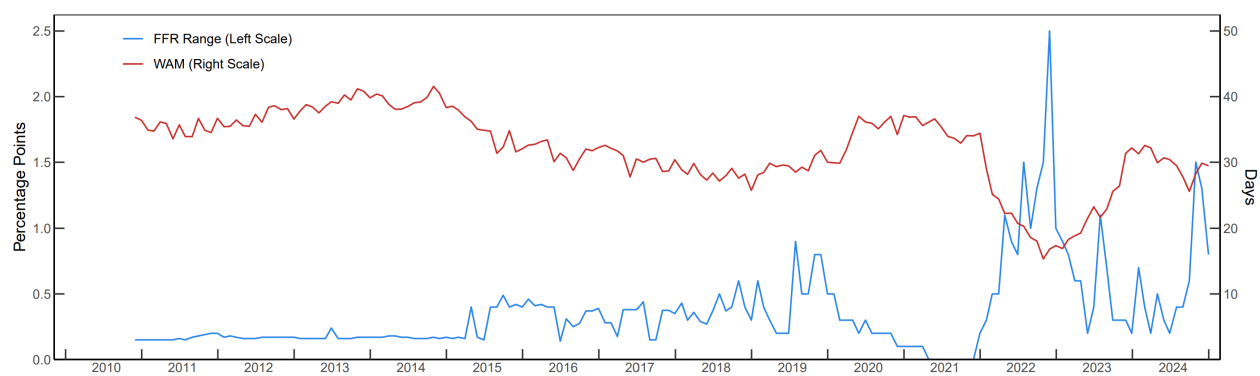
Figure 1: Measures of policy rate uncertainty: Forecast range and Implied volatility

Sources: Blue Chip Financial Forecast Survey, ICAP

Note: This figure shows two measures of policy rate uncertainty. FFR Range is the range of respondents' Federal Funds Rate (FFR) forecast. Data is from Wolters Kluwer's monthly Blue Chip Financial Forecasts. Implied volatility the swaption-implied volatility of the one-year swap rate at a horizon of six months ahead. Data is from ICAP. We use the average of the last 5 days in the corresponding month to align the Blue Chip Survey data. Data is for the period November 2010 to December 2024.

Figure 2: Forecast Range and WAMs

Sources: Form N-MFP, Blue Chip Financial Forecast Survey
Note: This figure plots the fed funds forecast range from the Blue Chip Financial Forecasts (in blue) and the weighted average portfolio maturity (WAM) for the MMFs filling Form N-MFP (in red). Data is monthly for the period November 2010 to December 2024.
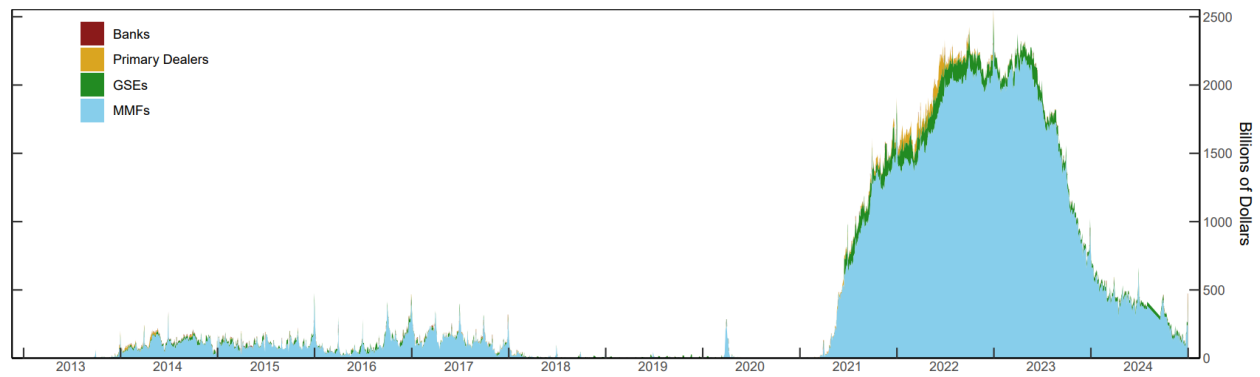
Figure 3: Implied Volatility and WAMs

Sources: ICAP, iMoneyNet

Note: This figure plots the swaption-implied volatility of the one-year swap rate at a horizon of six months ahead from ICAP (in blue) and the weighted average portfolio maturity (WAM) for the MMF from iMoneyNet (in red). Data is weekly for the period November 2010 to December 2024.
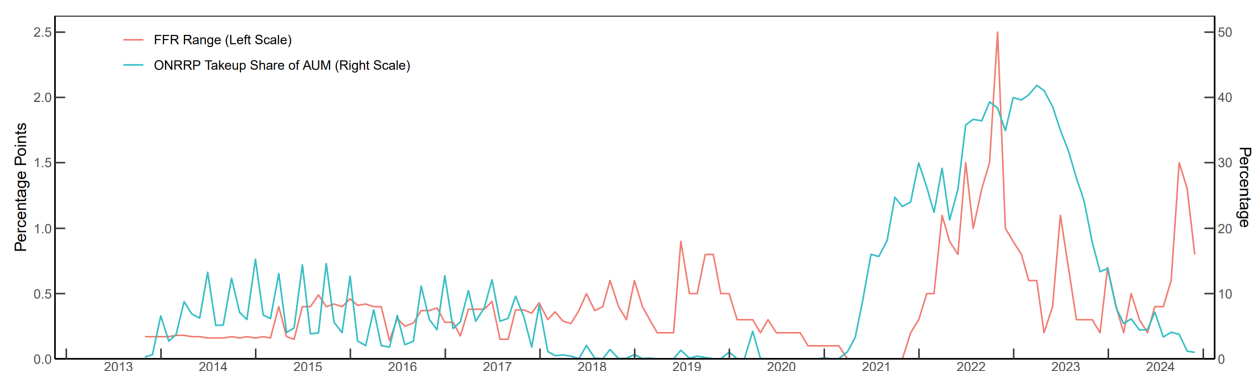
Figure 4: ON RRP Takeup by Counterparty (Daily)

Source: Federal Reserve Bank of New York
Note: This figure shows takeup at the ON RRP facility broken down by counterparty type. The decomposition is daily and starts from September 23, 2013 to December 31, 2024. The red, yellow, green, and blue areas represent takeup by banks, primary dealers, government sponsored entities (GSEs), and money market funds (MMF), respectively.

Figure 5: MMF ON RRP Takeup and Policy Uncertainty (Monthly)

Sources: Form N-MFP, Blue Chip Financial Forecast Survey
Note: This figure plots the Fed Funds Forecast range from the Blue Chip Financial Forecasts in red and the ON RRP takeup normalized by assets under management (AUM) in blue. Both ON RRP takeup and AUM are the total amounts across all money market funds. The data is monthly from September 2013 to December 2024.