Money Market Fund Growth During Hiking Cycles

A Global Analysis

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ABSTRACT: This paper examines the drivers of money market funds (MMFs) growth during monetary policy hiking cycles. Analyzing data from nine countries with notable MMF sectors post-pandemic, it examines three main drivers: yield differentials between MMFs and bank deposits, banking turmoils that affect perceptions of relative safety for traditional cash options, and structural characteristics (types) of MMFs. The findings indicate that MMFs attract capital during rising interest rates driven primarily by yield-seeking behavior. This pattern persisted following the 2023 banking turmoil, particularly in the U.S., where yield remained the dominant driver. After accounting for yield differentials, MMF growth was not unusually high compared to previous hiking cycles, suggesting limited evidence of widespread flight-to-safety flows. Moreover, when MMF yields rise, investors in the US and the euro area increasingly favor private debt MMFs, likely due to their higher yields. The study underscores the trade-off between safety and yield in investor behaviour, providing insights for policymakers on enhancing financial stability.

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Prepared by Kleopatra Nikolaou[1]

Contents

Glossary

MMF .... Money Market Fund

NAV .... Net Asset Value

CNAV .... Constant Net Asset Value

VNAV......... Variable Net Asset Value

LVNAV....... Low-Volatility Net Asset Value

USD........... United States Dollar

US .... United States

GFC........... Global Financial Crisis

JPY............ Japanese Yen

EUR........... euro

Executive Summary

This paper investigates the dynamics behind the growth of money market funds (MMFs) during the global monetary policy tightening cycle of 2022–2024. While past studies have focused on MMF vulnerabilities during systemic crises, recent developments—particularly rising interest rates, widening yield differentials, and the 2023 banking sector stress—have shifted the focus toward MMF inflows. The increase in MMF investments, especially in the U.S., highlighted the dual role MMFs play as yield-enhancing and liquid cash alternatives.

We examine MMF flows across nine countries with significant MMF sectors, focusing on three drivers: (1) the MMF yield advantage over bank deposits, (2) the impact of the 2023 banking turmoil, and (3) the structural composition of MMFs, particularly the split between public and private debt holdings. Our analysis is novel in its international scope and in its focus on MMF behavior during inflow periods.

The motivation for these drivers is supported by previous literature and recent experiences. MMFs typically offer higher yields to their investors compared to what banks can offer to depositors during periods of monetary policy tightening. Greater yield differentials between MMFs and bank deposits can enhance MMF growth, as yield-oriented investors shift their funds towards MMFs. Additionally, a loss of confidence in banks, resulting from banking turmoil such as that experienced in March 2023, can redirect capital towards MMFs, highlighting the importance of safety in cash management. Finally, MMFs are structured in various ways to accommodate different investor preferences regarding safety versus returns, while still maintaining their role as short-term safe assets.

Our findings show that the MMF yield advantage is a central factor behind MMF growth, particularly during periods of monetary tightening. Investors respond strongly to yield differentials, reallocating from bank deposits to MMFs when the return gap widens. This pattern was evident across countries in our sample, although the scale of response varied by region. Moreover, we find little evidence for a panic-induced inflow into MMFs in the wake of the 2023 banking turmoil. While in some jurisdictions (i.e. Europe) the effect was overall muted, in others, including the US, MMF inflows were driven more by return-seeking behavior than by panic or risk aversion. Finally, a rise in MMF yields can influence the allocation between public vs private MMFs, in different ways across countries.

Overall, the paper shows that MMFs play a growing role in global cash management, with implications for financial stability and monetary policy. The sensitivity of MMF flows to interest rate changes suggests that monetary tightening can accelerate deposit outflows from banks, complicating policy transmission. At the same time, the limited response to non-systemic banking shocks implies that MMFs primarily serve as instruments of yield optimization in the current financial environment. These findings underscore the importance of MMF design and regulation in managing liquidity risks in an evolving macro-financial landscape.

Introduction

In recent years, the dynamics of money market fund (MMFs) flows have returned to the spotlight. While past scrutiny largely focused on MMF outflows during systemic crises, recent attention has shifted toward their inflows—particularly during episodes of monetary policy tightening. This shift became especially relevant as central banks globally embarked on aggressive rate hikes in 2022–2024 following the pandemic. The tightening cycle revealed growing fragilities in the banking sector, as demonstrated during the 2023 turmoil involving the collapse of U.S. regional banks and Credit Suisse in Europe (Copestake et al., 2023; Jiang et al., 2024). Moreover, a significant yield differential emerged between MMFs and traditional bank deposits, likely prompting many investors—especially yield-sensitive ones—to reallocate capital away from bank deposits and into MMFs. The surge in MMF inflows, especially in the U.S., raised concerns over deposit stability and underscored the attractiveness of MMFs as both yield-enhancing and liquid cash alternatives.

This evolving landscape highlights two fundamental drivers of MMF flows: the search for yield and the desire of safety. Different MMF types have evolved to cater to different combinations of these preferences, yet the behavior of investors during inflow phases—particularly outside the U.S.—remains underexplored. We note, however, that these motivations are not always aligned. During periods of outflows, MMF investors may prioritize capital preservation, while during inflow periods, the relative return on MMFs becomes a stronger draw. This paper presents evidence of the latter motivation.

This paper analyzes MMF growth across a panel of nine countries with sizable MMF sectors that experienced post-pandemic rate hikes. It focused on three main drivers: First, the MMF yield advantage —the yield gap between MMFs and alternative cash investments such as bank deposits— as a proxy for investors' desire for higher yields (the return incentive). Second, the effect of the 2023 banking turmoil, which can undermine confidence in the banking system and redirect flows towards perceived relative safety, in our case MMFs. Third, the structural characteristics of MMFs across jurisdictions, particularly the public vs. private debt composition, which may condition investor sensitivity to risk and return. To our knowledge, this is the first study to systematically examine these three elements in an international context.

While existing literature supports the idea that yield advantages can drive flows into MMFs, this has not yet been tested. Work by Dreschler et al. (2017) and Xiao (2020) indicates that deposit outflows from banks into MMFs increase during tightening cycles. A key mechanism driving this shift is the opportunity cost of holding bank deposits, which tends to rise during monetary policy tightening periods. This opportunity cost arises as banks are typically slower to pass on higher rates and results in a yield differential—what we term the "MMF yield advantage" or "MMF spread." Rather than attempting to explain this gap, we take it as a given and construct a proxy for the MMF spread across a global panel of MMFs to examine its effect on MMF growth across countries.

We then investigate the impact of bank turmoil on MMF growth. A loss of confidence in the banking sector, in particular a banking crisis, could narrow the range of available alternatives and boost MMF flows. MMF inflows gained significant momentum in the US after the US regional banking crisis in March 2023 (Caglio et al, 2023; Adrian et al, 2024; Nikolaou, 2023; GFSR, 2023). However, these events occurred in the context of already rising MMF spreads. This paper asks: did the turmoil provide an additional push to MMF inflows, beyond what would be expected from higher yields? This approach sets the stage for understanding whether investor reallocations reflected panic and risk aversion, or rational shifts toward more attractive alternatives. Our contribution is twofold. First, while substantial work has been devoted to MMF vulnerabilities during systemic crises (e.g., Li et al., 2021; Kacperczyk and Schnabl, 2010; Aldasoro et al., 2021), less is known about how MMF growth responds to non-systemic, bank-originated shocks, notably the 2023 banking turmoil. Second, most evidence so far is U.S.-centric, with limited cross-country comparison, while this paper adopts a more international approach.

Finally, we examine certain structural aspects of money market funds (MMFs) that influence growth patterns, particularly the distinction between those investing in public versus private debt, a distinction particularly salient

to the US, the largest MMF jurisdiction[1]. Over the past decade, US MMFs have increasingly shifted towards public securities, but outside the U.S., private debt MMFs remain dominant. The shift towards public funds in the US was driven by regulatory reforms that imposed liquidity fees and redemption gates on private debt MMFs, so that public MMFs were instead offering relatively enhanced redemption certainly, by ensuring redemptions on demand and at par. While private debt MMFs can carry more redemption risk, they can generally offer somewhat higher yields, creating a tradeoff between safety and returns. We examine whether these structural differences influence flows during periods of rapid MMF growth, when the MMF yield advantage increases and during stress periods (the 2023 banking turmoil).

Our empirical findings offer several insights. First, we find that the MMF yield advantage is a key determinant of MMF growth across countries. MMFs grow significantly faster when they offer better returns relative to bank deposits—a relationship especially pronounced during monetary policy tightening. This confirms that MMFs are an important vehicle for yield-seeking behavior in a rising-rate environment.

Second, our results do not suggest a flight of investors to MMF safety following the US banking turmoil. Although the 2023 turmoil coincided with heightened financial stress, we find that MMF dynamics were shaped more by MMF superior returns than by pure risk aversion: With few exceptions (notably the Americas region, excluding the US), MMFs did not experience larger growth post turmoil compared to previous hiking cycles, once the role of spreads and macro/fund controls are accounted for. However, our results reveal that investors in certain regions, notably the US, "woke up" to the higher interest rates offered by MMFs. In those jurisdictions investors moved to MMFs when they became more attractive on a yield basis. Results also reveal regional differences, with the euro area showing little change post pandemic in both average inflows and sensitivity to the MMF spread. The differences are indicative of different investor dynamics and fund structures.[2]

Third, we find that public MMFs, despite their safer profile, are not universally preferred. While public MMFs dominate in the US and have experienced significant growth over the past decade, outside the U.S., private debt MMFs dominate and have even gained traction in some countries. Some of the reasons could be structural: The depth and liquidity of the U.S. Treasury market may enable large-scale public MMFs in the U.S., which may not be easily replicable in other jurisdictions. Nevertheless, we present evidence that when MMF yields rise relative to deposits, investors in major MMF jurisdictions (the US and the euro area) tend to prefer private-debt MMFs over public debt funds, suggesting that they may be willing to trade-off some safety for higher returns. Even in the wake of the 2023 turmoil, investors appear to have shifted away from public debt MMFs, aligning with our previous result showing that investor sensitivity to yield differentials increased following the turmoil. Finally, we also find that USD-denominated MMFs outside the U.S. grow faster than local currency MMFs, underscoring the dollar's central role in global cash management and safe asset demand.

Overall, our findings highlight the MMF yield advantage as a primary driver of MMF growth. This advantage typically emerges during monetary policy tightening cycles and has supported MMF inflows following the 2023 banking turmoil. While the turmoil itself did not appear to catalyze MMFs flows, we provide evidence that rising MMF spreads were driving growth at the same period in certain jurisdictions including the US. We also find that a rising MMF yield advantage can shift allocations away from public funds in certain jurisdictions. Our results suggest that in periods of rising MMF spreads, which largely coincide with hiking periods, yield considerations may be more relevant for investors compared to safety considerations. Of course, the results are subject to considerable heterogeneity across countries, pointing to different financial structures and investor behaviors.

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[1] There are several ways to differentiate MMFs, especially in a global context, as the regulatory frameworks as well as the financial ecosystems can vary substantially. For example, another relevant structural aspect for our analysis could be the ease of access to the investment and the ability to transfer the funds across investments. However, consistent measurement data across and within countries were not available in our data sets.

[2] See April 11, 2023 Reuters article: Why European MMF inflows are lagging behind US torrent

From a broader perspective, our findings have implications for financial stability and the transmission of monetary policy. First, the responsiveness of MMFs to rate hikes—especially through yield differentials, suggests that central banks may face more complex deposit dynamics in a tightening environment, as underscored by previous research (Xiao, 2020; Aldasoro and Doerr, 2023). Second, the muted response of MMFs to the 2023 turmoil suggests that, in the absence of a systemic event, market-based alternatives like MMFs may act as instruments of yield optimization rather than panic-driven safety switches. This highlights the importance of MMF design, regulation, and transparency in managing cross-market liquidity flows in an evolving macro-financial context.

The remainder of this paper is structured as follows: Section II described key measurements determining the size and geography of the global MMF sector. Section III narrows down the sample of countries for our analysis and describes the data used in the analysis. Section IV provides a more detailed motivation behind the factors explored. Section V presents the empirical methodology and results, and Section VI concludes

The size of the global MMF sector

MMFs are generally viewed as cash management vehicles by investors. They are open-ended investments funds, that typically invest in diversified portfolios of short-term, safe and liquid assets. They aim to preserve principal value of the investment, while typically offering the possibility of daily redemptions (FSB, 2021). In normal times, MMFs can offer comparable levels of security and accessibility, often at higher rates compared to other cash investment alternatives, such as bank deposits, and increased diversification of credit risks. They can therefore be seen as a desirable alternative for cash management purposes.

The MMF sector is present in a relatively limited number of countries, notably AEs, with the US having the largest sector. In December 2023, Advanced Economies, held the more than 75 percent of the total MMF value globally, while China made up the vast majority of MMFs in Emerging market economies (Figure 1,1). In terms of nominal size, the US has by far the largest MMF sector globally with just short of $6 trillion assets under management at the end of 2023. At that time MMFs in Europe and in China were less than half the size of US MMFs, around $1.5tr in each region. Beyond Europe, China and the US, countries with notable MMF sectors include Australia, Korea and Brazil (Figure 1,2).[3]

European money market funds are concentrated within a limited number of countries, each characterized by distinct money market fund classifications and currency compositions. European MMFs are concentrated in three countries, Ireland, France and Luxembourg.[4] MMFs in Ireland and Luxembourg cater for an investor clientele that is mostly non-domestic, in line with these countries being financial hubs. In Ireland and Luxembourg most funds are off-shore dollar funds, with a smaller participation of euro denominated funds and funds denominated in British pounds. Ireland has the largest number of British pound denominated funds. France hosts predominantly EUR denominated funds. MMF presence in other European countries is small in comparison (Figure 1.4).

When looking at the size of MMFs compared to the mutual fund sector in each country, the hierarchy of countries changes significantly. In most countries with notable nominal MMF presence in December 2023, MMFs operated within a much larger mutual fund sector. Most countries had an MMF sector less than 20 percent of the mutual fund sector, with an average of about 10 percent.[5,6] In the US, the MMF sector was around 17 percent of the overall mutual fund sector, ranking at the higher end. There were, however, a handful of emerging market

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[3] For a discussion on the historical development of MMFs, see Bouveret et al., (2022)

[4] The European regulatory reform of 2017 resulted to a unified European regulation, the so-called EU Money Market Fund Regulation (MMFR), which imposed more stringent regulatory requirements and increased the cost of compliance. As a result, the number of MMFs declined notably in smaller domiciles and MMF concentration increased (EFAMA, 2020).

[5] In Japan, the MMFs sector is small also because it is mainly limited to broker dealers for their liquidity management purposes (FSB, 2021). In Brazil, the size of the MMF sector is relatively small also because short-term liquid products dominate the investment fund environment (Brazil FSAP).

[6] According to data from EFAMA, December 2023.

economies, where the mutual fund sector is dominated by MMFs. In Costa Rica MMFs make up more than 90 percent of the mutual fund sector, while in China the MMF sector is almost 50 percent of the mutual fund industry.

Our sample comprises the largest MMF jurisdictions by nominal size that also experienced a hiking cycle in 2022. While this analysis excludes China, it includes the remaining eight largest MMF jurisdictions globally, encompassing key countries within the European market. Notably, among the countries in our sample, Chile and Mexico have relatively large MMF sectors compared to their overall fund industries.

Figure 1: MMF sector geography and size by different metrics

1. Percent of MMF sector size by country in different regions (percent or global MMF size)
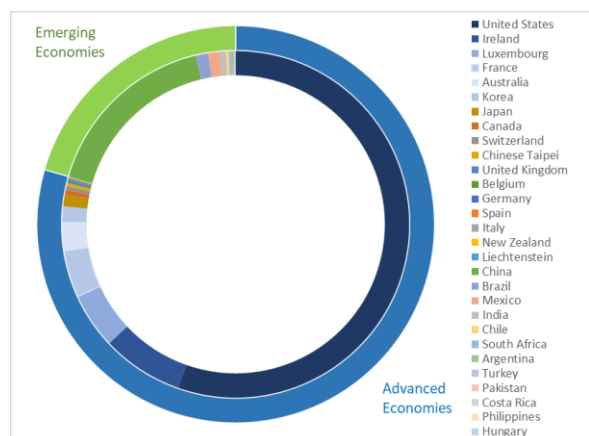
2. Nominal size of MMFs in countries, ordered by countries with the highest MMF presence (Billions of US dollars; Dec. 2023)
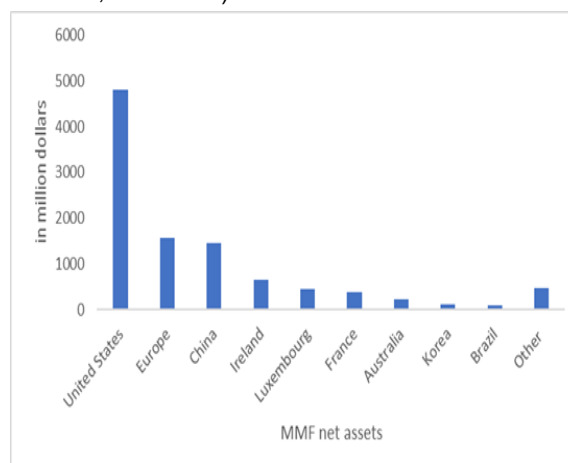
3. Net AUM of MMFs as a share of the mutual fund sector (net assets in bn of USD)
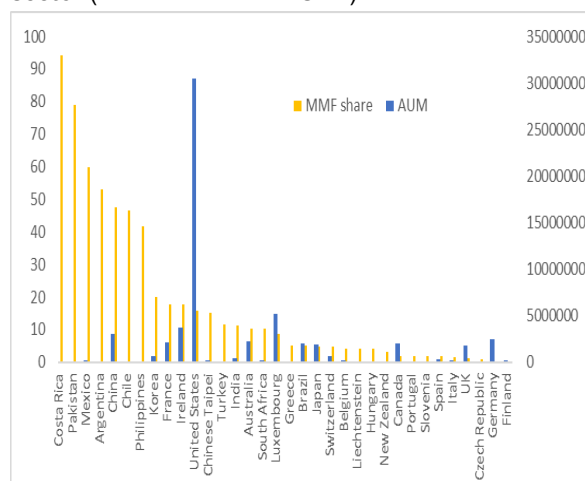
Notes: The Figure presents information on the size of the MMF sector globally. Chart 1 This chart illustrates the distribution of the MMF sector across various countries, expressed as a percentage of the total MMF size in different regions. Chart 2 presents the nominal size of MMFs in various countries, ranked from highest to lowest based on their MMF presence. The values are measured in billions of US dollars and reflect data collected in December 2023. Chart 3 depicts the net assets under management (AUM) of MMFs as a proportion of the overall mutual fund sector in each country, measured in billions of US dollars. Data Sources are Lipper and EFAMA and calculations from the authors.

Data

This paper uses an extensive dataset, that relies on several sources. We start with the presentation and construction of the dataset, which will be used to illustrate both the motivation and the analysis that follows.

We focus on countries with the largest nominal size of MMF sector, which underwent a hiking cycle in the last couple of years. This includes the US and European MMFs, as well as Brazil, Chile, Mexico, Australia and Korea. European MMFs are concentrated heavily in three countries, Ireland, Luxembourg and France, which, for the purpose of this analysis, constitute the European MMFs. We focus on MMFs denominated in the group of currencies that corresponds to the countries in our sample. This makes up the bulk majority of MMFs in each country, but in certain countries it can exclude MMFs denominated in other currencies (such as GBP or JPY). The excluded MMFs, however, make up a relatively small size of the overall sample.

We use monthly observations of NAVs for individual MMFs from Lipper, from January 2004 to September 2023. The data includes fund-level information on the Fund type (for the US and European MMFs only), the jurisdiction and the underlying currency of the Funds.[7] We construct year-on-year growth rate of NAVs as our key dependent variable. We examine MMF growth—normalized as year-on-year percentage changes— instead of flow levels to avoid confounding effects of absolute size differences between the U.S. and other markets. For example, a level analysis would likely suggest that MMF inflows gained significant momentum in the US compared to other countries after the US regional banking crisis in March 2023 (Caglio et al, 2023; Adrian et al, 2024; Nikolaou, 2023; GFSR, 2023). However, the rise in growth rates appears more uniform across countries, as shown at Figure 3, which illustrates average MMF growth across countries in our sample. To naturally exclude occasions of MMF conversions, for example from prime to government MMFs in the US, growth rates above 100 percent in absolute value are excluded from the sample.[8]

We augment the MMF dataset with additional monetary policy data. We use information on monetary policy rates from Bloomberg to create dummies for periods of policy rate hikes.[9] A hiking period extends from the first hike until the month prior to the first cut. For all European countries, the ECB policy rate is being used. In addition, we use a monetary policy rate shock measure as in Xiao (2020).

In order to construct the MMF yield advantage (or MMF spread) we need MMF yields and deposit rates for each country. However, yield data are either not available or not comparable across countries in our sample. We therefore use overnight money market rates across jurisdictions from Bloomberg as a proxy for MMF yields.[10] USD (EUR) denominated MMFs outside the USA (euro area) are also assigned the US (euro area) overnight rate. The overnight rate could be a lower bound for MMF yields, especially for the ones which can invest in private securities of longer duration, which is key asset category in the majority of MMFs outside the US. In that sense, our measure may underestimate the impact of the MMF yield advantage for countries outside the US.

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[7] In the US, government and Treasury MMFs appear under the same – stable NAV- category. In Europe, we group CNAVs and LVNAVs in one category and Short-term and Standard NAVs in another category.

[8] As a robustness check, we also run our results excluding growth rates larger than 75 percent and 50 percent. The results (not shown) are not economically different.

[9] The Bloomberg tickers used are: Australia: cash rate target (RBATCTR Index), Brazil: Seltic Target Rate (Bzstseta index), Chile: Monetary policy rate (Chovchov index), ECB: Deposit facility rate (EUORDEPO Index), USA: Federal Funds Target Rate lower bound (FDTRFTRL Index), Mexico: Bank of Mexico official overnight rate (Mxonbr Index), Korea: Official bank rate (KORP7DR Index).

[10] The Bloomberg tickers are: USA: Effective Federal Funds Rate (FEDL01 Index), Australia: Overnight cash-rate (RBACOR Index), Korea: Overnight call rate (KOCRD Equity), Brazil: CETIP DI overnight interbank rate (BZDIOVRA Index), Chile: Average interbank rate (CHIBPROM Index), Mexico: Overnight closing rate (MXBRBA Index), European Short-term rate (ESTRON Index).

Moreover, we use data from various sources (Bloomberg, IMF, central bank statistics) on national average bank deposit rates.[11] Again, consistent data are not available across countries. To maximize consistency, we focus on savings rates or, when available, deposit rates and certificates of deposits with maturities close to or more than one year.

We construct our proxy of MMF yield advantage as the spread between MMF yields and bank deposit rates. We follow a similar transformation for the yield advantage measure as for the monetary policy shock measure, that is, we take the cumulative change in the spread over the last three years.

Finally, we augment the dataset with data on inflation and GDP year-on-year growth rates by country, which we use as control variables.

Figure 2: Average MMF Growth by jurisdiction
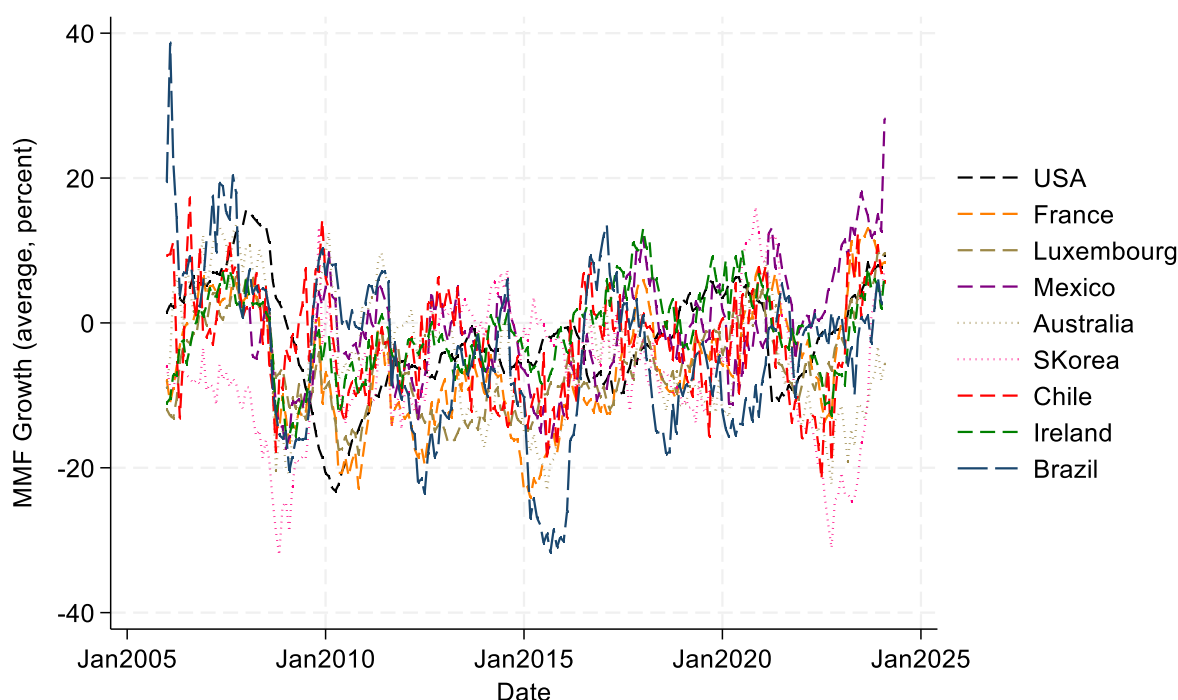
Notes: The chart plots the average MMF year-on-year growth rate across countries in our sample.
Source: Lipper and Staff calculations.

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[11] USA: 1 year CD rate, Europe: average of bank deposit rates from corporations and households with agreed maturity of over one year, for Brazil, Chile and Mexico: Average of deposit rate and savings rate from IMF statistics, for Australia: Deposit rate on savings accounts, Korea: average of Deposit rate on new time and savings deposits, 1-year bank deposits and deposit rate from CEIC.

Motivation

MMF yield advantage as a determinant of MMF flows

Previous literature has demonstrated that positive monetary policy shocks lead to inflows into MMFs (Xiao, 2020; Aldasoro and Doerr, 2023). The rationale is that yields from money market funds adjust more swiftly once a cycle of interest rate increases is underway, whereas bank deposits rates tend to lag. The faster adjustment of MMF yields is by construction, as they are based on diversified portfolios of short-term assets offering yields that closely track policy rates in highly competitive funding markets. On the other hand, the stickiness of deposit betas (the elasticity of bank rates to policy rate increases), especially when interest rates rise, has been well documented in the literature[12]. In this context, yield-oriented investors are more likely to switch from bank deposits to MMF deposits, when monetary policy tightening widens the spreads between MMF and bank rates Xiao (2020). Conversely, there is some evidence that monetary policy easing cycles put MMFs yields at a disadvantage compared to banks, leading to outflows from MMFs (Bua et al, 2019).

Investor flows into money market funds (MMFs) are influenced by broader portfolio allocation decisions that shift dynamically over the business cycle. A range of factors—including risk aversion and macroeconomic uncertainty—shape expectations about future returns and drive investors to reallocate between risky and safe assets, or between long-term and short-term instruments in a forward-looking manner. These shifts are especially pronounced during turning points in the business cycle. For example, during economic downturns or periods of heightened uncertainty, investors tend to reduce exposure to long-duration or volatile assets and increase holdings of liquid, short-term instruments such as MMFs and bank deposits. Conversely, in expansionary phases, when risk appetite rises and expected returns on risky assets improve, investors often reallocate away from cash-like instruments toward equities or longer-term bonds (Ederington and Colubeva, 2010; Chalmers et al., 2013). Such cyclical reallocations can affect the pool of capital available for investment in cash-like alternatives. However, the relative returns of cash-like alternatives play a decisive role in determining the allocation within the safe asset, liquid segment, which is the focus of this paper.

This paper focuses on the relative returns of cash-like alternatives, as determinants of MMF flows. The relationship between such relative returns – measured as the MMF yield advantage- and MMF flows has not been tested directly before. This paper fills this gap by constructing a proxy of the MMF yield advantage across countries and testing the hypothesis that MMFs grow faster in periods of interest rate hikes. Our proxy for the MMF yield advantage (that we refer to as MMF spread or simply spread in our analysis) typically increases across countries during periods of monetary policy hikes and declines outside these periods (Figure 2). However, the US and the euro area have seen a rebound in the spread during the zero lower bound period in the US and the negative rates period in the euro area.[13] This rebound had more to do with the decline in bank rates relative to MMF rates during this period.[14] Additionally, in all cases, the hiking cycle of 2022 appears to have driven a strong net increase in the spread.

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[12] The relevant literature suggests that bank deposit rates are influenced by market structure and bank strategies, other than policy rates. For example, banks with significant market power and strong "deposit franchise", which operate in concentrated markets tend to adjust deposit rates slowly (Dreschler et al., 2017; Dreschler et al., 2021). In the context of the euro area, Messer and Niepmann (2023) highlight that sluggishness in deposit rate adjustments can be due to excess liquidity in the banking system reducing the need for deposit funding, rather than lack of competition.

[13] The chart shows the case of France, but similar behavior is also exhibited in Luxembourg and Ireland.

[14] In both sides of the Atlantic, and in Korea the spread is negative in large periods of time, suggesting that bank rates offer higher yields compared to MMFs. The reverse holds in Mexico and Brazil, while in Australia the difference has been relatively small prior to the 2022 hiking cycle. Part of those differences may be attributed to the different definitions of deposit rates across countries.

Figure 2: MMF spread and monetary policy cycles
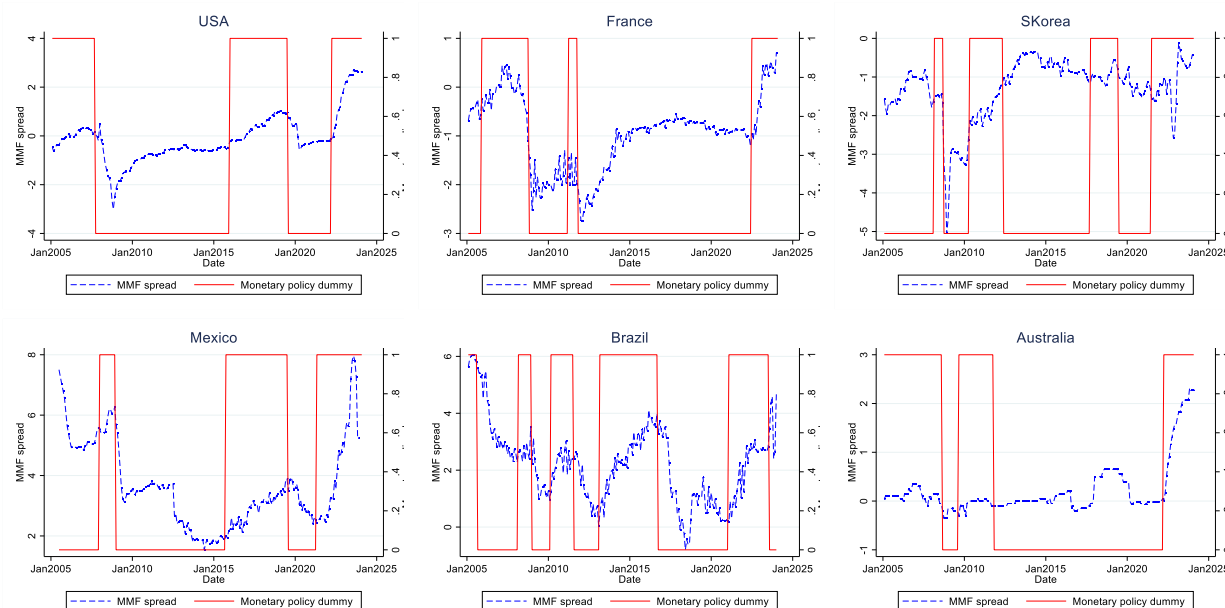
Notes: The charts plot the average MMF spread between MMF yields, proxied as money market rates and deposit rates across countries (blue line). We assume that USD and EUR denominated funds follow the USA and euro area money makret rates respectively. The red line denotes periods of monetary policy rate hikes. A hiking period is starts at the first rate hike and ends before the first rate cut. Spreads are calculated in percent. Source: Lipper, IMF statistics, Bloomberg, CEIC and Staff calculations.

The impact of the 2023 banking turmoil

Second, this paper examines how the 2023 banking turmoil has affected MMF flows globally. The rationale is that during banking crises investors often seek deposit alternatives, which MMFs can offer. Bank fragility can emerge in the context of monetary policy tightening from the interaction between declining asset values and shifts in depositor behavior (Jiang et al., 2024; Copestake et al., 2023). The 2023 regional banking turmoil in the US was a case study of such dynamics. Concerns about solvency and deposit safety triggered runs on some regional banks, leading to large deposit outflows into both systemically important U.S. banks and MMFs (Caglio et al, 2023; Adrian et al, 2024; Nikolaou, 2023; GFSR, 2023). Soon after, the collapse of Credit Suisse in Europe added to the sense of instability, reverberating across European banking markets.[15] Equity prices of global banks—particularly in advanced economies—dropped sharply, while emerging markets were less affected (Pandey et al, 2023).

Importantly, the financial stress receded quickly, helped by swift policy responses, including liquidity backstops and coordinated communication by central banks (Yousaf et al., 2023; Pandey et al., 2023). Still, the episode marked a notable test of the financial system during a global monetary tightening cycle—and presented a unique context to assess investor behavior.

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[15] See https://www.reuters.com/business/european-banks-bumpy-recovery-year-after-credit-suisse-collapse-2024-03-13/

This paper studies the impact of the 2023 banking turmoil on MMFs globally. Three features make the 2023 turmoil particularly relevant for analyzing MMF flows. First, unlike the GFC or the COVID-19 shock, the 2023 turmoil did not constitute a broad systemic crisis. That distinction matters, as systemic events typically affect both banks and MMFs, making it harder to disentangle substitution dynamics. In contrast, the 2023 turmoil predominantly hit the banking sector, allowing clearer observation of any "flight-to-MMF" effects.[16] Second, it allows analysis in a globally synchronized setting. The turmoil of 2023 took place amid a global hiking cycle. Since MMF growth is known to respond to rate hikes via yield differentials, this common backdrop offers a clean environment to isolate the incremental impact of the banking turmoil, controlling for monetary policy effects. Third, while sharp post-SVB inflows into U.S. MMFs have been widely discussed in policy and media circles, there has been little formal, cross-country analysis of MMF behavior during this episode. This paper fills that gap by comparing MMF flows across advanced and emerging markets.

The empirical analysis that follows aims to test whether MMF growth during the banking turmoil was significantly higher than in previous hiking cycles—controlling for yield spreads and other drivers. In doing so, we ask: did the turmoil provide an additional push to MMF inflows, beyond what would be expected from higher MMF yield advantage? This approach sets the stage for understanding whether investor reallocations reflected panic and risk aversion, or rational shifts toward more attractive, liquid alternatives.

Structure and types of MMFs as a driver of MMF flows

MMFs are generally viewed as cash management vehicles by investors. MMFs are open-ended investments funds, that typically invest in diversified portfolios of short-term, safe and liquid assets. They aim to preserve principal value of the investment, while typically offering the possibility of daily redemptions (FSB, 2021). Therefore, in normal times, MMFs offer comparable levels of security and accessibility, at higher rates compared to other cash investment alternatives, such as bank deposits, and increased diversification of credit risks and can therefore be seen as a desirable alternative for cash management purposes.

And yet, there are stark differences among MMFs. Across and within jurisdictions there can be different types of funds whose characteristics can be important for cash management decisions (FSB, 2024).[17] While there are several dimensions across which MMF types can be delineated, a broad dimension is between public and private debt MMFs. This category is particularly prominent in the US, the largest jurisdiction for MMFs.

In the US, government MMFs have become the dominant type of MMF. Those MMFs invest in public debt and typically allow investors to get their principal back on demand and at par, much like deposits. The investments of public debt MMFs in the US are typically in cash and short dated government securities.[18] The presence of these MMFs has been substantial in the US, but they expanded significantly following the 2015 MMF regulatory reform[19]

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[16] MMFs have been the source of financial instability, having experienced heavy redemption pressures during crises in our sample period, with considerable academic and policy literature focused on these instances (Li et al, 2021; Kacperczyck and Schnabl, 2010; Aldasoro et al. 2021; FSB, 2020). Nevertheless, following the GFC, MMF resilience has improved globally. This is largely thanks to substantial and ongoing regulatory changes, which focused on enhancing liquidity management tools and managing the redemption rights of investors to reduce liquidity mismatches.

[17] See FSB (2024), Annex 1 for an overview of the different categories of MMFS across jurisdictions.

[18] They can also involve repurchase agreements with Government securities as collateral.

[19] The 2015 MMF reforms in the US introduced several significant changes to enhance the stability and transparency of money market funds. One of the key changes was the requirement for institutional prime and municipal MMFs to adopt a floating net asset value (NAV) instead of a constant NAVs, which aimed to reduce the risk of runs on these funds during market stress. The reforms also introduced redemption gates that allowed money market funds to temporarily suspend redemptions if the fund's weekly liquid assets fell below a certain threshold, 30 percent of its total assets. Subsequent reforms in 2023 removed redemption gates but imposed liquidity fees on redemptions for non-government MMFs, which are mandatory for certain categories of prime funds. Both reforms mandated increased liquidity requirements, ensuring that funds maintain a higher percentage of their assets in liquid securities to better handle redemptions, and enhanced reporting requirements.

and currently account for more than 80 percent of the assets held by US taxable MMFs (Figure 4, Chart 1).[20] The main alternative in the US, prime MMFs, have broader investment options but face restrictions in redemptions.

The shift to Government MMFs has considerably stabilized the US MMF sector, suggesting that government MMFs may offer more comfort to investors in times of crisis. Contrary to GFC and the Eurozone crisis, when US MMFs saw considerable redemptions and outflows, the Covid crisis did not see many outflows in US MMFs in general (Gallagher et al, 2015). Instead, government MMFs have seen substantial inflows during the Covid pandemic, unlike their prime counterparts, who witnessed outflows[21]. This development speaks to the importance of government MMFs in attracting flows, underpinning the uneasiness of US investors with limited or uncertain access to their principal (Li et al, 2021). Nevertheless, government MMFs can yield less compared to non-government MMFs, which suggests that yield oriented investors may still find non-government MMFs appealing (Figure 4, Chart 2).

Outside the US, public-debt MMFs are not as prominent. In fact, the relative size of public debt MMFs in our sample, excluding the US, has remained broadly stable or even declined in other countries in our sample. Public debt funds have a substantial share in Korea (about 40 percent) but have less than 20 percent in the remaining countries. In Europe, money market funds with equivalent characteristics to US government MMFs account for only 10 percent of total EU money market funds (Constant NAVs or CNAVs) (Figure 4, Chart 3).[22]

Instead, in countries outside the US, the vast majority of MMF investments lean heavily on private liabilities. These MMFs invest in a diversified pool of liquid private debt, which can, in certain countries, include bank deposits (term or negotiable) and offer higher returns compared to public funds. This is because they also typically allow for somewhat longer maturities and relatively higher exposure to credit risk.[23] Nevertheless, on-demand access to the principal is typically restricted, with additional fees and "gates" on redemptions potentially imposed by the Fund, to safeguard against sudden and sharp liquidity withdrawals.[24]

Given the prominent difference between the US and the other countries in our sample, we investigate whether public debt funds attract more investor flows in the US compared to other countries. We also look into the role of MMF types in periods when MMFs grow faster. Those include periods when MMF spreads increase, such as during hiking cycles, or periods where alternative investments become less available, such as a banking turmoil shifting investors towards MMFs. In those periods, when yield oriented investors decide how to allocate their money, they may have to balance the need for immediacy and safety of their principle, that public MMFs offer, with somewhat higher returns that are typically offered by non-public MMFs.

Another significant differentiation among funds arises from their currency of denomination. The US dollar is the dominant currency in the global MMF market. While several countries offer USD-denominated funds, the largest

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[20] The depth and size of the US Treasuries market can be an important factor behind the large expansion of government MMFs, supporting the outgrown size of the US MMF sector compared to other countries.

[21] Similarly, the financial stability of European MMFs was also improved compared to the GFC. Despite concerns about liquidity squeezes for European MMFs during the pandemic crisis, no European fund had to impose trading suspensions.

[22] CNAVs are only found in Ireland and Luxembourg and are predominantly offshore USD funds. The share of CNAVS has grown in those two countries over time, but the dominant type of MMFs include limited exposure to private debt and guarantee the principal investment under conditions (low-volatility NAVs - LVNAVs). Shares of CNAVs and LVNAVs are considered cash equivalents under EU accounting standards. In France, the major EU jurisdiction for EUR denominated MMFs, the dominant MMF type is Variable NAV (V-NAVs). French MMFs offer almost exclusively variable NAVs and allow for a broader range of assets, including corporate debt and longer-term securities and are subject to looser liquidity rules (Chart 2, and Annex I).

[23] This behavior is notable in France and is also observed in Chile. Bank deposits are considered more liquid compared to other debt instruments issued by banks and bought by MMFs, such as CPs in Europe. Financial stability concerns can arise from increased interconnectedness between the bank and the non-bank sectors as MMF redemptions can contribute to deposit runs but these concerns are beyond the scope of this paper.

[24] While such tools remain at the discretion of the Fund in the case of the US government MMFs, they are mandatory in Europe (Table 1).

number and size of these funds are concentrated in Luxembourg and Ireland.[25] In contrast, EUR-denominated funds are predominantly based in Europe, and France hosting the largest number of such funds. In our sample, Chile is the only country outside Europe featuring EUR denominated funds, although USD denominated Funds are larger in size. In the remaining countries in our sample, MMFs denominated in domestic currency are the most prevalent. The USA is the only country in our sample that exclusively offers MMFs in domestic currency. The data reflect the strong home-currency bias but a robust demand for dollar-denominated assets nonetheless remains (Maggiori, Neiman & Schreger, 2020).

Accounting for different currencies of denomination can be very relevant for our exercise. MMFs denominated in foreign currencies typically invest in assets denominated in these currencies and therefore their yields are impacted more from the monetary policy in those countries, rather than their domestic policy rates (Dunne and Bua, 2019). We account for the different currencies of denomination by using the monetary policy rate of the country of currency denomination in our SPR spread. We also test whether USD denominated funds outside the US, which make up the vast majority of foreign currency denominated funds in our sample, typically attract more flows compared to domestically denominated MMFs.

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[25] Consequently, the total amount of dollar-denominated funds globally, including offshore dollar funds, exceeds that of US MMFs.

Figure 3: Government MMFs across countries and EU fund types

Chart 1. The evolution of Government MMFs across countries

Volume of Government MMFs by Country Over Time
% of Total NAV per Country
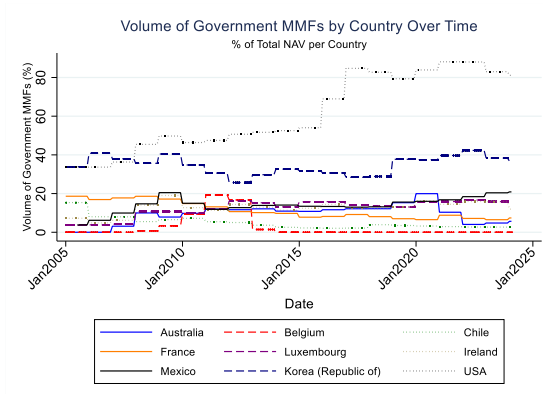
Chart 2. Government vs prime MMF yields in the US

Sources: Crane date; and IMF staff calculations
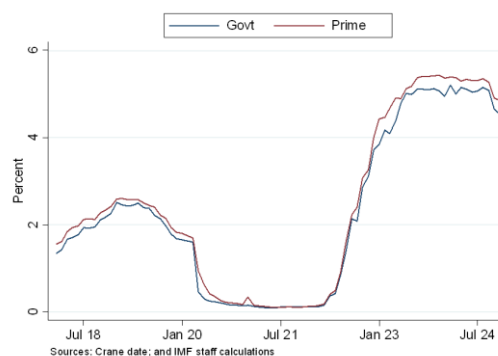
Figure 4: The evolution of EU Fund types

Volume of EU MMF Types in Ireland
% of Total NAV per Subcategory

Volume of EU MMF Types in France
% of Total NAV per Subcategory

Volume of EU MMF Types in Luxembourg
% of Total NAV per Subcategory

Notes: The Charts plot the evolution of government (public) funds in various jurisdictions. The government MMFs include Government and Treasury MMFs in the US and CNAVs in Europe. For the remaining countries in our sample, the Fund is assigned in the category when the name suggests it is a government MMF. Data run from January 2024 to December 2023. Source is Lipper and Staff calculations.

Methodology and Empirical analysis

First, we corroborate the results of previous literature, namely that positive monetary policy shocks lead to inflows for MMFs. We use the following regression form:

$$\Delta y_{t,i} = \beta \Delta pr_t + controls_{t,i} + FE_{t,c,i} + \varepsilon_{t,i} \quad Eq(1a)$$
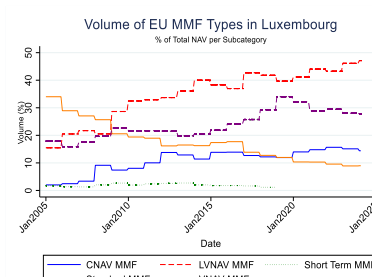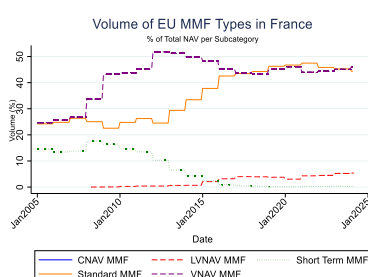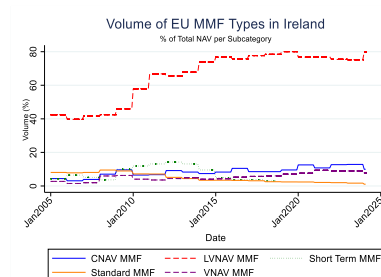
where $\Delta y_{t,i}$ denotes the year-on-year growth rates in NAV (proxy for flows) at the fund level, Δpr_t denotes changes in the monetary policy rate[26], the *controls* include both broader macroeconomic controls (changes in inflation and GDP) and fund specific characteristics and *FE* includes fixed effects for time and fund characteristics, which include country, size (as measured by NAV) and parent company.[27] The standard errors of the regressions are robust and clustered at the fund level.

Column (1) of Table 1 presents the results and confirms the positive relationship between monetary policy shocks and MMF growth. For each 1 percentage point increase in the policy rate, MMF growth increases by 2.44 percentage points, holding other variables constant. This indicates that higher interest rates are associated with increased MMF growth, possibly due to MMFs offering higher returns relative to other alternatives for cash management, an hypothesis that we explore next. The results also show that larger funds grow significantly faster than smaller ones, with large funds seeing nearly double the growth advantage of medium-sized funds compared to small funds. That is an indication of concentration in the field of MMFs. Macro variables are significant and behave as expected. MMF assets rise faster with higher GDP and decline with higher inflation.

Impact of the MMF yield advantage

Next, we demonstrate that a key factor in determining cash management allocation is the MMF yields offered compared to cash management alternatives such as bank deposits. We use our proxy for the MMF "yield advantage"—the difference between the MMF yield and the bank deposit rate—to test the hypothesis that this yield spread significantly influences investor decisions.

We test two hypotheses: First, that yield advantage of MMFs positively impacts MMF growth, i.e. the higher the spread the stronger the MMF flows. We do so by simply substituting the spread with the monetary policy rate in the equation above, as the two variables in our sample exhibit high correlation.[28]

$$\Delta y_{t,i} = \beta \Delta Spread_{t,c} + \gamma Dummy_{HC_{t,c}} + controls_{t,i} + \varepsilon_{t,i} \quad Eq(1b),$$

Second, we test whether the yield advantage is higher during periods of monetary policy hikes. To empirically assess the impact of this advantage, we adopt a difference-in-difference analysis of the following form:

$$\Delta y_{t,i} = \beta \Delta Spread_{t,c} * Dummy_{HC_{t,c}} + \gamma \Delta Spread_{t,c} + \delta Dummy_{HC_{t,c}} + controls_{t,i} + \varepsilon_{t,i} \quad Eq(1c),$$

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[26] As in Xiao (2020), the monetary policy shock is the cumulative change in the monetary policy rate. We have also used the cumulated change in the overnight money market rates as an alternative, with very similar results, both quantitatively and qualitatively.

[27] We create a dummy to categorize MMFs by size. The dummy takes the value of 1 if the MMF size is below 25 percent of the average MMF size in the respective country, 2 if the Fund size is between 25 percent and 75 percent and 3 when it is above 75 percent.

[28] Looking across our sample of countries, the yield advantage typically correlates strongly with monetary policy rates. Contemporaneous correlation coefficients are around 50 percent to 80 percent in most countries, with the exceptions of Australia and Korea, where the correlation coefficients are almost zero.

where $Spread_{t,c}$ is the difference between MMF yields, proxied by overnight money market rates, and bank deposit rates for each country c (the MMF yield advantage). $Dummy_{HC_{t,c}}$ is a dummy that takes the value 1 during the different hiking cycles for each country in our sample. The hiking cycle ranges from the first monetary policy rate hike until the first cut. The interaction term, $\beta \Delta Spread_{t,c} * Dummy_{HC_{t,c}}$ shows whether the attractiveness of the MMFs, proxied by their yield advantage, is more pronounced when central banks are raising interest rates.[29]

Table 1: Impact of monetary policy on MMF assets
Results from panel regression of Eq. 1a-c

	(1)	(2)	(3)
Country	All	All	All
Policy rate	2.44***		
	(.024)		
Spread		3.515***	2.178***
		(.047)	(.109)
Dummy (hiking cycle)			2.458***
			(.212)
Spread * Dummy			.689***
			(.136)
Dummy (size medium)	5.544***	6.714***	6.455***
	(.163)	(.169)	(.208)
Dummy (size large)	11.945***	13.331***	13.977***
	(.198)	(.208)	(.257)
Inflation	-0.95***	-0.328***	-0.143***
	(.023)	(.023)	(.024)
GDP	0.28***	0.076***	0.002
	(.011)	(.014)	(.014)
FE country	Yes	Yes	Yes

Notes: The table presents the results (coefficients and standard errors) from specifications in Eq (1 a-c). Spread is the cumulative difference, over the past three years, between MMF yields (proxied by the overnight money market rate in each country) and the average bank deposit rate in the respective country. The Dummy variable takes the value of 1 during hiking cycles of each country. Fixed effects are included for country and MMF size. The MMF size variable is a dummy that takes the value of 1 if the MMF size is below 25 percent of the average MMF size in the respective country, 2 if the Fund size is between 25 percent and 75 percent and 3 when it is above 75 percent. The regressions exclude the period from September 2016 to September 2017. Three, two and one asterisks denote significance at the 1 percent, 5 percent and 10 percent level respectively.

Table 1 (columns 2 and 3) provides evidence that the yield advantage of MMFs is a significant determinant for MMF flows, notably during hiking cycles. Consistent with the results presented so far, the column (2) shows that MMF assets grow when there is a monetary policy hiking cycle. The coefficient is overall stronger compared to the monetary policy coefficient in column (1) and confirms that investors are drawn to MMFs when their yields outperform bank deposits. Column (3) shows that the spread between MMF yield and the bank rates has increased also outside periods of monetary policy hikes (positive coefficient for the Spread variable). MMFs see higher baseline growth during hiking cycles (almost +2.5 percent). In addition, the positive interaction term suggests that the effect of the yield spread on MMF flows is amplified when monetary policy is tighter. In other words, during a hiking cycle, investors are even more likely to move their money into MMFs if they offer better returns than bank deposits. Across specifications the results consistently indicate that larger funds grow significantly faster than smaller ones, with large funds seeing nearly double the growth advantage of medium-sized funds compared to small funds. That is an indication of concentration in the field of MMFs. Macro variables

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[29] We need the interaction term to distinguish between hiking and easing cycles. The spread could, in theory, be rising also during cycles of monetary policy easing if banks adjust their deposit rates sharply lower. It also controls for possible increase in the spread outside the windows of monetary policy tightening.

are significant and behave as expected. MMF assets rise faster with higher GDP and decline with higher inflation. These findings on control variables remain consistent in the specifications used in the remaining paper.

Impact of banking turmoil of MMF growth

Next, we analyze how the 2023 banking turmoil affected money market fund (MMF) growth. Not all growth periods are equally relevant, as previous results have shown that MMFs tend to grow faster during monetary policy tightening cycles. Therefore, we focus on comparing MMF growth during the 2023 turmoil period to earlier hiking cycles. Crucially, we also account for the role of MMF yield advantages during these cycles using the following specification:

$$\Delta y_{t,i} = \beta Period_{t,c} * \Delta Spread_{t,c} + \gamma Period_{t,c} + \delta \Delta Spread_{t,c} + \zeta controls_{t,i,c} + \varepsilon_{t,i} \quad Eq(2b)$$

where $Period_{t,c}$ is a binary indicator equal to 1 during the three months following the collapse of Silicon Valley Bank (March–June 2023) and 0 during prior hiking cycles (adjusted for each country's timeline). $\Delta Spread_{t,c}$ measures the MMF yield advantage over bank rates, as discussed above. This specification isolates the post-turmoil period effect independent of the impact of the yield spread (via the coefficient of the post-turmoil dummy) and captures the varying sensitivity to the MMF spread during the turmoil (via the coefficient of the interaction term).

Table 2: Impact of 2023 bank turmoil on MMF growth
Results from panel regression of Eq. 2

	(1) All	(2) USA	(3) euro area	(4) Americas	(5) Asia-Pacific
Dummy post turmoil	-4.106**	-27.682**	.670	7.647***	-19.706***
	(1.019)	(13.103)	(1.730)	(1.256)	(3.716)
SPR	4.278***	3.125***	11.889***	2.165***	1.813***
	(.116)	(.191)	(.265)	(.171)	(.297)
Dummy post turmoil *SPR	1.865***	9.785*	-8.567**	-.618	7.303***
	(.716)	(4.190)	(4.115)	(.837)	(2.511)
Contols					
Macro	Yes	Yes	Yes	Yes	Yes
MMF size / type	Yes	Yes	Yes	Yes	Yes
FE country	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the results (coefficients and standard errors) from the specification in Eq (2a) for all countries (column one) and different regions (columns 2–5). The Americas region includes Brazil, Chile and Mexico (excluding US). The Asia-Pacific region includes Australia and Korea. The post-turmoil dummy takes the value of 1 from March to June 2023. The dummy of the 2022 hiking cycle takes the value of 1 from the first-rate hike until the first rate cut in the period that contains some part or all of 2022 for each country. The dummy for the previous hiking cycle takes the value 1 during the previous hiking cycles in our sample in each of the economies in our sample, excluding the 2022 cycle. The controls include dummies of the size of MMFs, for the domicile of the MMF, inflation and GDP and MMF type dummies as described in equation 2. The US regression excludes the period from September 2016 to September 2017. Three, two and one asterisks denote significance at the 1 percent, 5 percent and 10 percent level respectively.

Table 2 presents the regression results for all countries and by region. In the full sample (column 1), MMF growth was lower in the post-SVB period compared to earlier hiking periods, but its sensitivity to the MMF spread increased significantly, indicating that relative yields became a stronger driver of inflows. However, the aggregate results hide significant variation across regions: In the U.S., contrary to the prevailing narrative of

surging MMF inflows post-SVB, MMF growth declined relative to earlier hikes—once controlling for macroeconomic conditions, fund types, and yield spreads. However, the responsiveness to yield differentials increased substantially, consistent with more intense yield-seeking behavior. In Asia-Pacific, results were directionally similar. In contrast, the euro area saw no significant change in average growth post-turmoil, while a decline in spread sensitivity suggests muted yield-driven inflows The Americas region (excluding the U.S.) was the only area to show a significant increase in MMF growth post-turmoil, without a corresponding increase in spread sensitivity, pointing to different investor dynamics.

Overall, our findings do not support the notion of a uniform "flight to safety" into MMFs following the collapse of SVB and Credit Suisse. While these events may have heightened investor awareness of banking sector vulnerabilities, the data suggest that MMF inflows were not driven by panic. Although headline inflows increased during the post-turmoil period, these were largely explained by macroeconomic conditions, fund-specific characteristics, and—most importantly—widening yield differentials during the rate hiking cycle. Once these factors are controlled for, MMF inflows appear even smaller than in previous hiking episodes. However, in certain jurisdictions, including the U.S., investors became more yield-sensitive after the turmoil, with higher MMF yields helping to sustain inflows despite reduced overall momentum.

Impact of MMF characteristics on MMF growth

Finally, we expand the analysis of fund-specific characteristics by examining fund types and currency of denomination. We investigate whether public debt funds typically attract more flows compared to other types by adding a public debt dummy in equation (1b). The dummy (*Dummy_GF*) takes the value 1 for Government and Treasury MMFs in the US and CNAVs in Europe. For the remaining countries in our sample, our dataset does not provide fund type characteristics, so we rely on the fund name and assign the value 1 when the name suggests it is a government MMF. Additionally, we include a dummy that takes the value 1 when the currency of denomination is USD (Dollar Fund) for funds outside the US. This allows us to test whether USD-denominated funds, which are the most common currency of denomination for MMFs in our sample, have stronger inflows compared to MMFs denominated in local currencies. Our baseline specification takes the following form:

$$\Delta y_{t,i} = \beta Spread_t + \gamma Dummy\_GF_{t,i} + \delta Dollar\ Fund_{t,i} + controls_{t,i} + \varepsilon_{t,i} \qquad Eq(3a) \ ,$$

Furthermore, we examine whether public funds receive more inflows when the MMF spread increases, which, according to previous analysis, leads to faster MMF growth. We do this by adding an interaction term between the MMF spread and the dummy for public funds (dummy_GF).

$$\Delta y_{t,i} = \beta Spread_t + \gamma Dummy\_GF_{t,i} + \delta Spread_t * Dummy\_GF_{t,i} + controls_{t,i} + \varepsilon_{t,i} \qquad Eq(3b) \ ,$$

Our previous results have also demonstrated that, while MMFs did not necessarily grow faster during the 2023 bank turmoil, MMF growth in certain jurisdictions, including the US, became more sensitive to the MMF spread. We test whether in those periods yield oriented investors decide to allocate their money in public vs non-public funds by including an interaction between the dummy for public MMFs (dummy_GF) and the dummy for the post-turmoil period used in equation 2.

$$\Delta y_{t,i} = \beta Spread_t$$
$$+ \gamma Dummy_{GF\,t,i} + \delta Dummy_{post\_turmoil,t,c} * Dummy_{GF\,t,i} + \varepsilon Dummy_{post\_turmoil,t,c}$$
$$+ controls_{t,i} + \varepsilon_{t,i} \qquad\qquad\qquad Eq(3c)$$

In all specifications controls include the typical size and macro variables presented in the previous specifications, as well as fixed effects for the MMF Domicile.

Table 3: Impact of MMF types on MMF growth
Results from panel regression of Eq. 3a-3c

	(1)	(2)	(3)
Domicile	All	All	All
Spread	2.414**	2.673***	2.900***
	(.067)	(.076)	(.072)
Government	0.495	-0.221	0.511
	(1.032)	(1.032)	(1.023)
Spread * Government		-1.125***	
		(.153)	
Dummy (post-turmoil)			2.728***
			(0.602)
Dummy (post-turmoil) * Government			-3.902***
			(1.195)
Dollar Fund	10.651***	10.761***	
	(1.814)	(1.810)	
Contols			
Macro	Yes	Yes	Yes
MMF size	Yes	Yes	Yes
FE country	Yes	Yes	Yes

Notes: The table presents the results from Eq (2a) – (2c). Spread is the cumulative difference, over the past three years, between MMF yields (proxied by the overnight money market rate in each country) and the average bank deposit rate in the respective country. The Government dummy identifies public-debt MMFs (government MMFs in the US and CNAVs in Europe). The post-turmoil dummy takes the value of 1 from March to June 2023. Macroeconomic controls include year-on-year changes in inflation and GDP. Country fixed effects are included. The MMF size dummy takes the value of 1 if the MMF size is below 25 percent of the average MMF size in the respective country, 2 if the Fund size is between 25 percent and 75 percent and 3 when it is above 75 percent. The regressions exclude the period from September 2016 to September 2017. Three, two and one asterisks denote significance at the 1 percent, 5 percent and 10 percent level respectively.

Table 3 presents the results from equations 3a-3c for all countries in our sample. The dummy for public MMFs has an insignificant coefficient in all specifications, suggesting that public debt funds do not attract more inflows compared to other funds. This makes sense considering that public debt funds are dominant only in the US. Furthermore, the interaction term in the second column is significant and negative, implying that when the MMF yield advantage increases, public debt funds typically see lower inflows compared to other Fund types. Specifically, for government MMFs, the impact of a 1 percentage point increase in the spread is reduced by 1.125 percentage points compared to non-government MMFs. The result suggests that, in periods where MMF returns increase, yield-oriented investors shift towards private debt MMFs, likely because the latter provide even higher yields. Similarly, in column (3), the interaction term is also significant and negative, indicating that in the post-turmoil window, government MMFs experienced a significantly lower growth rate compared to non-government MMFs. This result also suggests that investors may be attracted by the higher yields offered by non-public MMFs and is consistent with higher sensitivity to the yield differential as found in the previous section.

The Dollar fund dummy is positive and highly significant across all specifications. This suggests that USD-denominated MMFs outside the US have a growth advantage of almost 11 percent on average compared to MMFs in other currencies (local currency and EUR). The finding could suggest a preference for USD as a safe-haven currency, reflecting global investors' confidence in the stability and liquidity of USD-denominated assets, particularly during periods of economic uncertainty. This result aligns with previous research that examines the role of currency denomination in capital flows and investment behavior (Maggiori, Neiman & Schreger, 2020). Additionally, this growth trend may indicate the implications of monetary policy divergence between the US and other countries.

Table 4: Impact of MMF types on MMF growth by region

Results from panel regression of Eq. 3b

	(4)	(5)	(6)	(7)	(8)
Domicile	USA	Europe	Europe	Americas	Asia/Pacific
Spread	3.143***	6.758***	2.673***	1.479***	1.014***
	(.176)	(.157)	(.076)	(.131)	(.188)
Government	2.949***	-5.380***		3.044	-.360
	(1.123)	(2.041)		(3.140)	(1.54)
Spread * Government	-2.543***	-2.075***		1.168**	1.539**
	(.233)	(.562)		(.468)	(.414)
Dummy (bank turmoil) * Government					
Dummy (LVNAV)			8.301***		
			(1.903)		
Spread * Dummy (LVNAV)			3.623***		
			(.423)		
Dollar Fund		11.315***	10.415***	4.779*	
		(1.878)	(1.698)	(2.58)	
Contols					
Macro	Yes	Yes	Yes	Yes	Yes
MMF size	Yes	Yes	Yes	Yes	Yes
FE country	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the results from Eq (3b) for different regions. Spread is the cumulative difference, over the past three years, between MMF yields (proxied by the overnight money market rate in each country) and the average bank deposit rate in the respective country. The Government dummy identifies public-debt MMFs (government MMFs in the US and CNAVs in Europe). The post-turmoil dummy takes the value of 1 from March to June 2023. The LNAV dummy takes the value of 1 when the fund is identified as a Lov-Volatility NAV in the Lipper database. Macroeconomic controls include year-on-year changes in inflation and GDP. Country fixed effects are included. The MMF size dummy takes the value of 1 if the MMF size is below 25 percent of the average MMF size in the respective country, 2 if the Fund size is between 25 percent and 75 percent and 3 when it is above 75 percent. The regressions exclude the period from September 2016 to September 2017. Three, two and one asterisks denote significance at the 1 percent, 5 percent and 10 percent level respectively.

Table 4 presents the results from specification 3b across countries, in an attempt to understand better the role of government MMFs in the US vs other regions. The results confirm that public MMFs are more attractive compared to non-public ones in the US. US public MMFs grow on average by an additional 2.949 percent relative to non-public MMFs. This result partly reflects the large government MMF expansion since 2015 captured in our sample. Instead, public MMFs in Europe (CNAVs) have a negative growth differential, suggesting that they are less attractive than non-public MMFs. Outside these major jurisdictions, the coefficient of the dummy is insignificant, suggesting no notable difference between the two types.

The interaction terms also point to different responses from investors towards public MMFs across regions when the MMF spread is rising. In the US and the euro area the interaction coefficient is negative, indicating

that government MMFs attract on average fewer inflows compared to non-public funds when the MMF yield advantage increases. Column 6 explores investor preferences over the type of MMF when considering Low-volatility NAVs (LVNAVs). As mentioned, CNAVs, the equivalent of government MMFs in the US, are a small part of the European MMF universe, with LVNAVs being a more dominant type, especially in Luxembourg and Ireland. Both CNAVs and LVNAVs are considered cash alternatives according to EU rules. The results suggest a shift of investors from CNAVs to LVNAVs when the spread is rising. The results confirm the dominance of LVNAVs over government bond funds in Europe.

In contrast, outside the US and the euro area investors tend to prefer public MMFs when the yield advantage is rising. The attraction to public MMFs outside the US and Europe during periods of rising MMF spreads could be largely driven by a combination of flight-to-safety dynamics, perceived creditworthiness of government securities, and limited safe-haven alternatives in these regions. Moreover, public MMFs in emerging markets may offer relatively high yields compared to government MMFs in the US and Europe, due to higher yields on local sovereign debt. This could make public MMFs particularly appealing during rising spreads, as they combine safety with attractive returns. The exact reason could be further explored in future research. Overall, our results show considerable differences in growth dynamics of public MMFs across regions.

Conclusion and further work

In conclusion, our analysis highlights the MMF yield advantage as a primary driver of MMF growth. This advantage typically emerges during monetary policy tightening cycles and has supported MMF inflows following the 2023 banking turmoil. While the 2023 banking turmoil itself did not appear to catalyze MMFs flows, we provide evidence that rising MMF spreads were driving growth at the same period in certain jurisdictions including the US. We also find that a rising MMF yield advantage can determine allocations to different fund types. In the US and the euro area investors shift towards private debt MMFs notably when MMF spreads rise, while outside these two areas the preference is for public MMFs. We also demonstrate a preference for USD-denominated MMFs in several jurisdictions outside the US, which underscores the importance of USD as a safe-haven currency in international finance. These findings provide valuable insights into the factors influencing MMF growth and investor behavior in different MMF jurisdictions during hiking cycles.

The findings of this paper carry policy implications for regulators and central banks as they navigate the complexities of money market fund (MMF) dynamics in a shifting economic landscape. The sensitivity of MMF flows to interest rate changes suggests that monetary tightening can accelerate deposit outflows from banks, complicating policy transmission and financial stability. Our paper suggests that, in major countries, large and private debt MMFs will grow further in size and can impact the monetary policy transmission mechanism, which traditionally works through bank deposits. At the same time, the limited response to non-systemic banking shocks implies that MMFs primarily serve as instruments of yield optimization in the current financial environment. These findings underscore the importance of MMF design and regulation in managing liquidity risks in an evolving macro-financial landscape. Regulatory frameworks should ensure that MMFs maintain adequate liquidity and risk management practices. In addition, more transparency regarding MMF yields compared to banks and the inherent risks associated with different fund types may help investors to make more informed decisions, thus supporting financial stability. As the landscape of cash alternatives continues to evolve, ongoing monitoring and adaptive regulation will be essential to safeguard the integrity of both MMF markets and the broader financial system.

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