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# Monetary Policy and Money Market Funds

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We explore how recent unconventional monetary policies have affected money market fund behaviour. This category of investment funds is important from a monetary policy perspective because its members provide investment opportunities that are expected to be safe and highly liquid while they are actively involved in short term interbank funding markets. Crucially, they do not have access to the ECB's deposit facility. At its extreme, unconventional monetary policy puts money market funds under pressure by depressing the yields available on the assets they typically hold. This could cause excessive risk taking by funds, outflows of investment and unintended intermediation between banks and funds. We consider whether these concerns are well-grounded and reveal other unintended side-effects.

## Introduction

What do money market funds do when monetary policy is at its most accommodative and when unconventional measures push the rate of return on short term liquid assets into negative territory? The answer to this question is of interest to policy makers who want to know whether their policies are having the intended effects while avoiding negative unintended consequences. Interest in the response of money market funds stems from the fact that these entities provide investments that are expected to be stable and highly liquid while they do not have direct access to central bank deposit facilities or official liquidity operations. In a recent analysis of money market fund holdings and performances we (Bua, Dunne, and Sorbo (2019)) provide a broadly reassuring perspective on the financial stability concerns that sometimes arise when funds are operating under very accommodative monetary policy circumstances. In the same paper we explore the unintended side-effects of unconventional policies for the duration of short term funding being supplied by money market funds.

More than 40 percent of euro area money market funds, by asset value, are located in Ireland. The fund population used in Bua et al., includes 'Constant' as well as 'Variable' net asset value funds (regularly referred to as CNAV and VNAV funds) in roughly equal proportions. The CNAV group has as its main objective the maintenance of a constant value

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of fund units/shares (with earnings paid-out fully on a regular basis). From a holder's perspective, units in a CNAV fund are regarded as providing highly stable returns from assets (fund units) that are easily transferable into cash. CNAV funds in the US suffered unexpected losses during the Great Financial Crisis that triggered sponsor involvement (where the sponsor was typically a systemically important bank). Sponsors tried to preserve the non-negative return credentials of their funds and this had systemically destabilising consequences which brought about a regulatory response that restricted the kind of assets that could be held by such funds, permitted losses for the holders and prevented future sponsor involvement.<sup>3</sup> This has turned out to be an important preparation for the recent negative rate policy circumstances. Notwithstanding the progress made in isolating money market funds from their sponsors, their behaviour at times of unconventional monetary policy (both arriving and departing from the low rate) remains of importance to the functioning of the banking system and money markets. This is the main focus of the recent analysis.

## Relative Importance of Euro Area Monetary Policy

The majority of the money market funds included in the study by Bua et al. choose to invest in assets denominated in one of three different currencies (EUR, USD and GBP). This diversity of investment behaviour provides a rare opportunity to compare the effects of different monetary policy combinations on funds' investment choices and performances without the inconvenience of differential regulation. Money market funds are key actors in money markets and play an important role in the transmission of monetary policy. Like banks in the short term market for corporate deposits, money market funds are considered to be safe places to park short-term idle funds. However, unlike banks, money market funds do not normally engage in significant term transformation nor do they typically invest in illiquid lending products. Rather, they issue redeemable shares while investing in high quality short-term assets such as treasury bills, repurchase agreements and certificates of deposit. Compared with MMFs in the US, MMFs in Europe tend to invest more heavily in bank-issued short term liabilities (on average holding more than 60% of their portfolios in short term debt issued by lending institutions) so their behavioural response to monetary policy has more relevance in the euro area for the supply (and conditions) of short term funding to banks.

With this in mind, the most obvious concerns of monetary policy setters when implementing unconventional measures include: (i) increased risk-taking by money market funds and the consequent increased run-risks that this might produce, (ii) a deepening of harmful linkages and dependencies between banks and money market funds (e.g., through more frequent cash depositing with banks and investing in certificates of deposit) and, (iii) unintended consequences for the supply of funding at different maturities and therefore on the transmission of monetary policy and lending conditions in interbank markets. Of addi-

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<sup>3</sup>This prompted similar regulation in the EU which came into effect in July 2018. Our study ends just before this regulation came into effect.

tional interest to policy makers is the potential for dissipation of euro area policy actions through increased investment abroad (including outflows from all, or specific groups of, money market funds). Since many euro area money market funds invest entirely in non-euro-denominated assets and because most funds also diversify across the location of issuers (so long as issuance is in the desired currency of the fund), there exist two-way channels for spillovers between euro area and foreign monetary policies to fund returns.

The most obvious evidence of external policy influence is the fact that, by far, the most dominant force driving money market fund performance is the policy interest rate of the currency in which funds invest, regardless of the fact that they are all domiciled in the euro area (see Figure 1).<sup>4</sup> Hence, euro area monetary policy only directly affects about 25% of the funds and 16% of invested capital of the sector. The first panel of Figure 1 shows how challenging conditions were for the euro-investing funds relative to conditions experienced by funds investing in Sterling or Dollar assets (these non-euro investing groups each account for greater than 35% of the population of funds and of the assets under management). Despite the particularly challenging conditions for the euro-investing group, no sudden investor outflows occurred that would validate run-risk concerns. However, euro-investing and GBP-investing funds had modest growth in assets under management (measured in euros) throughout the sample while USD-reporting funds grew by approximately 50% between late-2014 and early-2018 (see Figure 2). The stagnation in growth of euro-investing funds may also reflect the anticipated long duration of a negative rate environment communicated through the ECB's forward guidance.<sup>5</sup>

Euro area money market funds diversify their risk exposures beyond the macroeconomic conditions of the currency of their investments. In our sample, on average, 50 percent of the assets of each currency group are issued by entities based outside the investing currency region.<sup>6</sup> This introduces the possibility that some of the unexplained MMF return performance can be accounted for by macro and risk factors of currency areas other than that in which the funds invest (i.e., regardless of the currency of denomination of the assets). We address this by running a set of supplementary regressions to explore whether the performance that is left unexplained by macro, QE and risk factors of the investing currency region can be explained by the same factors of other currency regions. Overall, we find that these additional factors do not generally add significantly to explanatory power of the regressions. The only exception is when the US-corporate spread is included in the supplementary regression for the VNAV euro-investing funds. In this case, the supplementary goodness of fit implies that an additional 5 percentage points of variation in the per-

<sup>4</sup>This is also consistent with evidence in the wider literature such as by Di Maggio, 2017 for the case of US money market funds.

<sup>5</sup>We did not address empirically whether forward guidance had effects on investor flows across the three categories of funds but it seems likely to have been a contributory factor.

<sup>6</sup>On average, of the assets held by the EUR-reporting sample 22 percent are issued by UK entities and 7 percent by US entities; of the assets held by GBP-reporting sample 32 percent are issued by EA entities, 4 percent by US entities and 22 percent by entities from other countries; of the assets held by the USD-reporting sample 7 percent of are issued by UK entities, 20 percent by EA entities and 18 percent by entities in other countries.

formance of VNAV euro-investing funds can be explained. We found additional evidence of increased diversification into assets issued by foreign entities when policy rates were at the lower bound and when asset purchases were in full flow. For CNAV funds this seems to have moderated the negative policy rate effect on performance.

## Response to Unconventional Measures

An important challenge faced by money market funds relates to the use of unconventional monetary policies. The effects of asset purchases was particularly noticeable in the euro area case where the yield on short term debt securities became much more negative than the policy rate (shown as the lowest line for most periods in the top panel of Figure 1). Somewhat surprisingly, the very negative yields on short term debt securities that coincides with the use of unconventional monetary policy does not show-up strongly in the performance of the euro-investing fund group on average (although, in our regression analysis, the volume of public sector purchases has a significant parameter with a positive sign implying performance declines with purchases).<sup>7</sup> We also found that the growing gap between short term bond yields and the policy rate moves in tandem with increased cash transactions with banks and (particularly for the case of euro-investing CNAV funds) a steady rise in the holding of certificates of deposits issued in euros by UK banks. So the effect of asset purchases seems to have been a redirection of investments towards bank deposits of one type or another.

One way that funds could try to improve their performance in the negative or low rate environment is to take additional risks through increasing the term and reducing the liquidity of their investments. This would normally allow them to earn term and liquidity premiums. However, we find that term extension is not prominent in the euro- and GBP-investing fund categories. This is perhaps not surprising as there was limited opportunity to increase returns through term extension when investing in these currencies. The slopes of the term structures (at the short end) were flat or negative (and quite variable) for most of the period studied, implying little by way of a term premium to reward such risk taking.<sup>8</sup> Term of investment mostly contracted for the euro-investing category and there is also little evidence of reduced liquidity of investments (with bank deposits rising as a proportion of assets).

Modification of the term of investment by money market funds seems to be better explained by the 'direction' and 'gradualism' of policy rather than by risk taking motives. We find that the speed of response of MMF performances to policy rate changes differs significantly by

<sup>7</sup>Some of the individual VNAV fund performances do display a more than proportionate negative relationship between performance and the conventional policy rate for the case of VNAV funds. This reflects the fact that yields on short term sovereign debt securities went significantly below the policy rate during the Expanded Asset Purchase Programme. But in general the strong relationship between performance and the conventional policy rate dominates.

<sup>8</sup>Most money market funds are restricted to a one or two year term for their investments (these will usually be assets with deep and liquid secondary markets).

reporting currency. The evidence is consistent with a shortening of investment term when monetary policy is gradually easing and vice versa. Hence, in the euro-investing population there is a lagged adjustment to declining rates. In contrast, USD-investing funds' performance rapidly reflects future expected rates as the term structure of rates steepens. This behaviour makes sense if there is any doubt about the timing of a turning point in policy. A shortening of term when rates are declining and a lengthening when they are rising could potentially enable funds to avoid the lowest point of a dip in rates.

These behavioural responses to policy actions could be destabilising for interbank markets – forcing banks to rely on rolling-over a larger proportion of their funding more frequently than they would prefer. It also has potential implications for the transmission of monetary policy at the very short-end of the term structure of interest rates. If localised supply contributes to the determination of interest rates at specific tenors, as described in Vayanos and Vila (2009) and Greenwood and Vayanos (2010), then sudden changes in the direction of policy from moderation to contraction would decrease the supply of funding at the very short end and increase it at the maximum tenor at which funds are permitted to invest. These supply reactions move in the opposite direction to intended policy and could therefore interfere with its transmission.

## Concluding Comments

Overall, there are relatively minor effects of unconventional monetary policy on money market funds in terms of risk-taking behaviours and run-risks. Increases in investment by the money market fund sector as a whole has been almost entirely directed into US dollar denominated assets and the fraction of funds over which euro area policy has effects is now considerably smaller than it was at the start of the asset purchase programme. While run risks did not materialise, there have been unintended consequences of extreme policy measures that should be monitored. These are associated with; (i) the strengthening of potentially damaging linkages between banks and money market funds - driven by significant movements into near-cash assets, and, (ii) changes in the tenor at which funds choose to lend to banks in interbank markets as a result of policy gradualism.

The bank-fund linkages could be an important consideration when monetary policy is being renormalised. Closing of the gap between yields on short term debt securities and the policy rate before raising interest rates would likely dissuade money market funds from repeatedly depositing with banks and reduce the incentives for banks to supply certificates of deposits to funds. In short, it would weaken the linkages between banks and money market funds. This is, of course, just one of a number of aspects to the timing of policy actions that policy makers will need to consider when renormalising.

As regards the response in the tenor of investment to policy actions, a quicker policy response when interest rates need to be reduced would generate less disruptive contractions in funding duration. Moreover, overshooting on the downside (in addition to transmitting the easing of policy more immediately) would lengthen investment tenor and bring it into

line with the accommodative policy stance. This may smooth the transmission of monetary policy reducing distortions in the short-end of the term structure of interest rates. It would also avoid the inevitable sudden switch to a lengthening of investment term when policy turns from easing to contraction.

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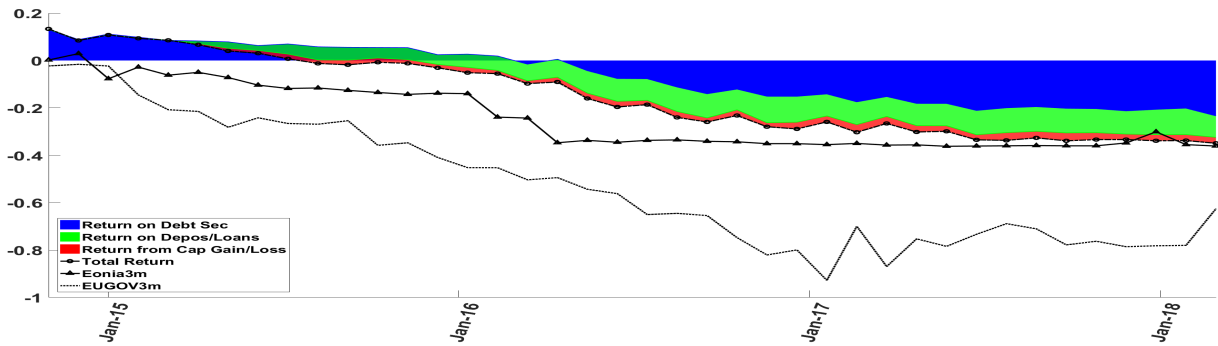
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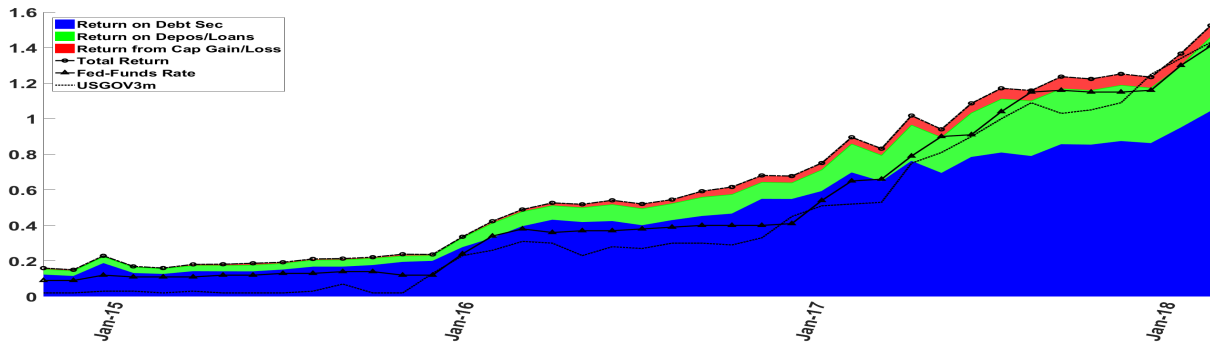
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## Figures

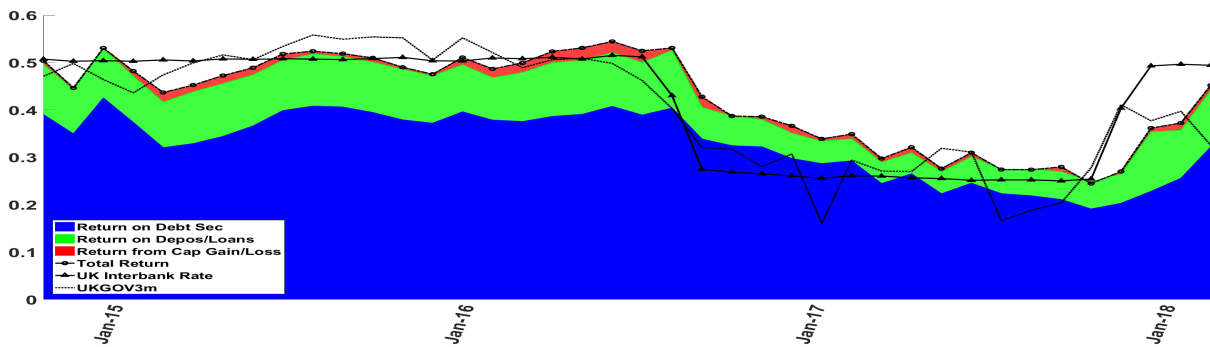
Figure 1: MMF Return Performance (%).



(a) EUR Reporting MMFs



(b) USD Reporting MMFs



(c) GBP Reporting MMFs

Note: The components of total annualised returns are shown for money market funds categorised by reporting currency. Returns of each group are the sum of each type of income from investment summed across the entire portfolio of all funds in each category as a percentage of the NAV of the fund category at the beginning of each period. The fund-segment performance is comparable with the policy rate and the annualised yield-to-maturity available on sovereign bonds with a term to maturity of 3 months.



Figure 2: Assets Under Management (AUM) by currency category in euro.

