



# Money market funds – an economic perspective

## Matching short-term investment and funding needs

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**Money market funds are under regulatory scrutiny.** The importance of money market funds in short-term funding markets became evident when US funds experienced an investor run during the financial crisis in 2008. New regulation aims to mitigate the potential risks to financial stability.

**Money market funds perform credit intermediation and short-term maturity transformation.** They invest in bank deposits, repurchase agreements and high-quality debt instruments with short remaining maturities. However, investors may redeem their shares daily.

**Money market funds offer investors money market returns and liquidity, while providing the economic benefits of a pooled investment.** As opposed to a direct investment in money market instruments, investors benefit from portfolio diversification, economies of scale and the fund manager's expertise.

**In June 2014, money market funds managed assets worth EUR 3.2 tr worldwide.** This was down from over EUR 4 tr in 2008. The US market accounts for 58% of global MMF assets, the European Union for 28%.

**Money market funds are a scale business.** In both the European and the US market, there is a trend to bigger fund sizes.

**The euro area money market fund industry is split into two market segments.** On the one hand, funds using variable net asset valuation account for 43% of the total. Most – but not all – of these are French funds and are denominated in EUR. On the other hand, funds based on constant net asset valuation have a 57% market share. They are predominantly domiciled in Ireland and Luxembourg and most of them are denominated in GBP or USD.

**US money market funds are classified by investment focus, tax status and type of investor.** So far, CNAV funds have been market standard but recent regulation mandates that funds perceived as prone to runs convert to variable net asset valuation.

**Money market funds in the euro area contribute substantially to the short-term funding of banks.** Thus, they are more of an intermediary within the European financial sector, where banks are traditionally the main providers of credit to non-financial borrowers.

**The role of US money market funds as intermediary between non-financial sectors is much more pronounced.** Roughly two-thirds of the industry's funds are provided by non-financial investors and over 40% is channelled to non-financial borrowers, mainly government entities.



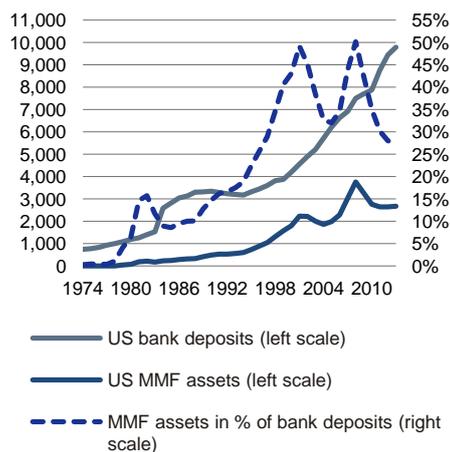
## Money market funds – a primer

Money market funds are well-established players in the US and European financial markets, and increasingly in some emerging economies. They offer cash-like investments to lenders on the one hand and short-term funding to wholesale borrowers on the other hand. Their important role in short-term credit intermediation became evident at the height of the financial crisis in 2008 when US money market funds experienced an investor run and, subsequently, reduced their lending. This caused serious financial stress for some borrowers reliant on short term funding and triggered central bank intervention. Since then, money market funds have been in the focus of regulators in the US and the European Union, as part of broader initiatives aimed at enhancing financial stability.

This study will commence with an introduction to the economic function and business model of money market funds. The main focus, though, will be on the market structure as well as the interconnectedness of money market funds with other parts of the economy. The euro area and US markets will be analyzed separately in order to capture their different profiles. We will also give a brief overview of current regulatory initiatives. Finally, we will sum up the findings and discuss drivers of potential future developments.

### US: MMFs attract sizeable investments 1

USD billions (left scale), % (right scale), 1974-2013



Sources: Federal Reserve, FDIC, Deutsche Bank Research

### Why money market funds?

In the US, money market funds emerged in the 1970s when regulation capped the interest that banks were allowed to pay on deposits at a level below money market yields. Money market funds were set up to mimic bank deposits by maintaining a stable value of USD 1 per share while offering money market yields to investors. Thus, money market funds gained a reputation as a profitable alternative to bank deposits and quickly attracted investments – especially from retail clients and banks<sup>1</sup>. Besides, money market funds could gain nationwide scale as they did not fall under the legal restrictions on interstate banking.<sup>2</sup> In Europe, France was in the vanguard of the development of the money market fund sector. There, as in the US, regulatory restrictions regarding interest on bank deposits led to the emergence of money market funds. French funds, however, are based on share prices floating in line with a fund's net asset value.

However, regulatory arbitrage does not explain the strong and lasting growth of money market funds. In fact, money market funds in the US continued to grow after interest rate regulation was abolished in 1986, and interstate banking limits were repealed in 1994. The same holds true for French funds. From an investor's perspective, they are an alternative to bank deposits and direct investments in money market instruments like repos or debt securities. Evidently, money market funds offer economic benefits that accompany financial intermediation.

As a financial intermediary, a money market fund performs maturity and size transformation and offers risk reduction via diversification.

Although money market funds are only active in short-term instruments, they still transform maturities. On the one hand, they offer liquidity to their investors by

<sup>1</sup> Cook, Timothy Q., Duffield, Jeremy G. (1979). Money Market Mutual Funds: A Reaction to Government Regulation Or A Lasting Financial Innovation? Federal Reserve Bank of Richmond. Economic Review. July/August 1979, pp. 15-31.  
<sup>2</sup> Luttrell, David et al. (2012). Understanding the Risks Inherent in Shadow Banking: A Primer and Practical Lessons Learned. Federal Reserve Bank of Dallas. Staff Papers. November 2012.



## Money market funds – an economic perspective

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allowing daily share redemptions at stable or only slightly fluctuating share prices. On the other hand, they invest in money market assets which are short term by nature but comprise financial instruments with remaining maturities of up to two years. In order to preserve the principal value of the cash received, money market funds operate within tight investment rules requiring high-quality assets and setting tight limits on the portfolio's average maturity. Capital preservation and daily liquidity make money market funds an attractive cash management instrument for institutional investors who seek to place a short-term cash surplus and to earn interest above the rate for bank sight deposits. Currently, though, ultra-low money market rates have eliminated the yield difference between bank deposits and investments in MMFs.

As a pooled investment vehicle, credit risk reduction is another argument for money market funds, and has especially gained importance since the 2008 financial crisis. Investors benefit from the fund's portfolio diversification into different instruments, markets and debt issuers. Counterparty risk is thus less than with a bank deposit, especially for amounts above the threshold of deposit insurance.

The risk reduction from diversification comes at a low cost for investors as the pooling of funds combined with the specialization of an asset manager provide scope for increased efficiency and economies of scale in the investment process. Investors can save resources by relying on the asset manager's expertise in credit risk management in short-term markets.

Moreover, money market funds transform the size of investments. Retail investors in particular may appreciate the possibility to gain access to diversified money market investments at low minimum purchase requirements.

Research suggests that most of the growth of money market funds since the 1990s has nevertheless been associated with cash-rich institutional investors' demand for safe investment opportunities. As this demand from institutional cash pools could not be met by a sufficient supply of "safe" short term government bonds, money market funds – among others – presented an alternative.<sup>3</sup>

For wholesale borrowers, the sizeable investments made by money market funds have become an additional and important source of short-term funding. Quite often, the borrowers are financial institutions which in turn perform further steps of credit intermediation, ultimately channelling savings to businesses or households for investment or consumption purposes. So a money market fund investing in bank debt essentially supports the bank's lending to other parties. Also, a money market fund might invest in asset-backed commercial papers issued by a special purpose vehicle which in turn holds securitised bank loans made to households or firms. Money market funds, thus, are part of a chain of entities involved in credit intermediation, a process which is traditionally all conducted directly within one depository institution (bank).<sup>4</sup>

### Business model

Investors in money market funds include participants from all areas of the private sector, i.e. banks, insurers, pension funds, other non-bank financial institutions, corporations and households. They invest surplus cash in return for shares in the fund and receive interest on their investment. Generally, investors are entitled to redeem their shares daily.

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<sup>3</sup> International Monetary Fund (2014). Shadow Banking around the globe: how large, how risky? Global Financial Stability Report. October 2014, p. 74pp.

<sup>4</sup> For a more detailed discussion of non-bank financial intermediation, please see Pozsar, Zoltan, Adrian, Tobias, Ashcraft, Adan and Boesky, Hayley (2013). Shadow Banking. Federal Reserve Bank of New York. Economic Policy Review. July 2013.

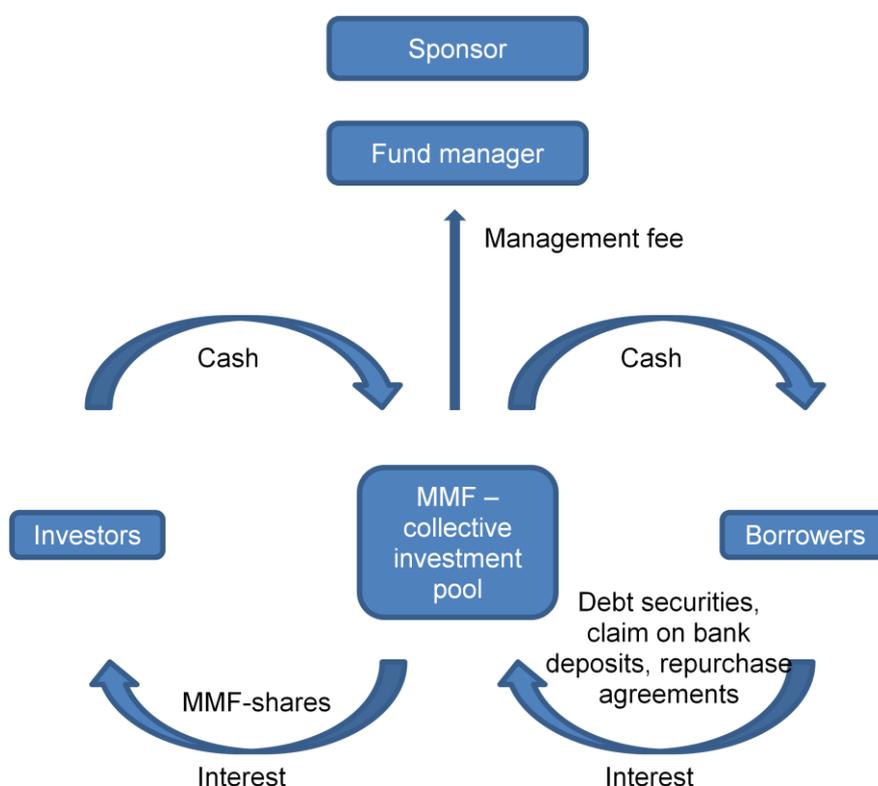


## Money market funds – an economic perspective

The fund manager, in turn, invests the funds in money markets, e.g. by engaging in repurchase agreements (repos), depositing funds with a bank or investing in high-quality short-term debt securities. Also, money market funds may invest in high-quality longer-term bonds – if the remaining maturity is short. Repos are secured cash lending, with the lender (in this case the money market fund) buying a security from the borrower who commits to buy it back at a certain date and price. The interest for borrowing is reflected in the difference between the purchase price and a higher repurchase price. The securities serve as collateral for the lender.

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### Money Market Fund (MMF) Structure



Source: Deutsche Bank Research

The short-term securities bought by money market funds comprise mainly the following instruments, provided they have a high credit rating:

- Certificates of deposit (CD): issued by banks
- Commercial papers (CP): unsecured promissory notes issued by banks or large corporations
- Asset-backed commercial papers (ABCP): securities issued by special purpose vehicles (SPV) and secured by assets purchased by the SPV
- Short-term debt issued by government entities or backed by government guarantees
- Short-term bonds issued by private issuers
- Shares of (other) money market funds



## Money market funds – an economic perspective

The fund manager or its service providers will cater for operational and custody services. The fund manager earns a fee which can be based on various pricing models, e.g. a deduction from the interest earned by the fund or a charge related to buying or redeeming shares.

In part overlapping with the range of investors, the borrowers from money market funds are mostly financial institutions (banks, insurers, pension funds and investment funds, and others), but also governments and to a small extent corporations issuing investment grade debt. The sectoral composition of borrowers as well as of investors in money market funds differs in the various national markets.

The term “sponsor” is used for an affiliated or parent company of the money market fund’s manager. This will usually be an asset management firm running various funds, or a bank. A sponsor is not legally or contractually obliged to support its money market fund in times of financial stress, but might do so in order to avoid reputational damage and to prevent a loss of investor confidence from spilling over to its other lines of business.

### Classification of money market funds

Money market funds follow different investment policies and are tailored to the differing needs of potential investors. They can be classified by the targeted investor group (institutional versus retail) or by investment focus (debt of private or public issuers). Also, national laws and taxation shape the industry. However, all money market funds attempt to maintain the value of the invested funds while offering liquidity and some interest payments.

Depending on the accounting technique applied, money market funds either offer their shares at a constant net asset value (CNAV) or a variable net asset value (VNAV, also called floating NAV). The net asset value (NAV) is a fund’s price per share and is calculated as the difference between the fund’s assets and its liabilities, divided by the number of shares outstanding.

CNAV funds use amortized cost accounting. They value an asset at acquisition cost and, if applicable, write down the premium paid in a linear way over the remaining life span, so the asset will be valued at par at its maturity.<sup>5</sup> This enables the fund to maintain a constant share price of EUR 1 (if the fund is denominated in EUR). Nevertheless, as a check, CNAV funds must periodically calculate their NAV at market prices. If this “shadow” NAV falls below the CNAV by a certain amount, the shares have to be re-priced. In the US, a money market fund must reduce its constant share price if the mark-to-market value of the fund’s NAV is down to 99.5 cents or less. The fund is then said to “break the buck (dollar)”.

Income in CNAV funds is accrued daily and usually paid out to investors on a regular basis. CNAV funds can offer same-day redemptions.

VNAV funds use mark-to-market accounting, i.e. the share price depends on the market value of the fund’s assets. Income is accrued daily and usually treated as a capital gain reflected in an increased NAV. Some VNAV funds, though, pay out income instead. If VNAV funds value assets after market close, redemptions cannot be executed until the next day. In practice, and often depending on national law, there are also money market funds making use of both accounting techniques, e.g. VNAV funds applying amortized cost accounting to certain securities with a particularly short remaining maturity. Also, there are variations

<sup>5</sup> Or in the case of a discount: They value an asset at acquisition cost and add back the discount in a linear way over the remaining maturity.



## Money market funds – an economic perspective

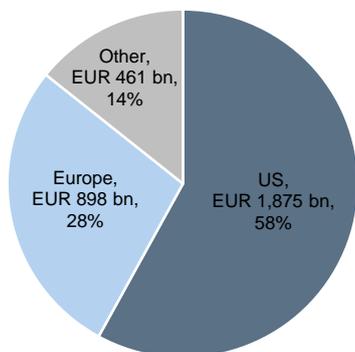
in the treatment of income, e.g. there are CNAV funds reinvesting the interest accrued in the fund rather than paying it out.<sup>6</sup>

### US biggest MMF market

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## MMF industry size and structure

Net assets, 2014 Q2



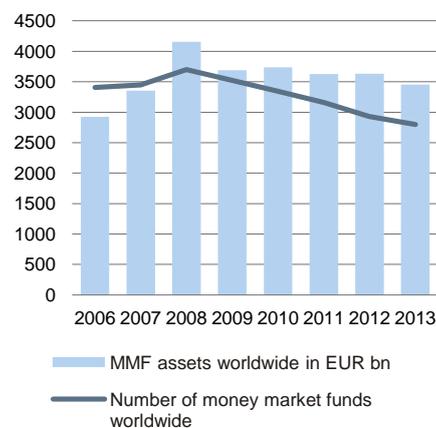
Sources: EFAMA; Deutsche Bank Research

Globally, money market funds managed assets worth EUR 3.2 tr at the end of 2014 Q2. The entire mutual fund industry had assets under management totalling EUR 25.7 tr worldwide. Most assets were invested in equity (40%) or bond (22%) funds, whereas money market funds accounted for 13% of the mutual fund industry's assets. Looking at the number of funds, though, the 2,764 money market funds represented just 3.5% of the 78,033 mutual funds worldwide.<sup>7</sup> This reflects the fact that money market funds are a scale business and tend to manage quite large investment volumes. The global figures are based on data covering 46 countries, including the most advanced economies and some large emerging markets. Thus, the statistics give a fairly comprehensive picture of the global mutual fund industry.

A regional breakdown of money market funds can only be done by country of domicile, as the reporting is tied to the country of incorporation. However, funds can be managed and/or promoted in a location different from the country of domicile. Also, they might be allowed to invest in debt issued by entities not resident in the fund's country of domicile.

### Asset contraction and higher fund concentration after Lehman collapse

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Sources: EFAMA, IIFA, Deutsche Bank Research

Money market funds domiciled in the US manage 58% (i.e. EUR 1.86 tr or USD 2.56 tr) of all assets held by such funds globally. This is not surprising given the US tradition of capital market funding in general and the existence of money market funds since the early 1970s in particular. The European Union is the second largest jurisdiction for money market funds. Funds domiciled in the EU have a 28% global share in this investment class (EUR 0.9 tr or USD 1.23 tr). In Europe, money market funds are predominantly domiciled in the euro area – indeed, EMU-based funds manage 96% of all assets of EU money market funds. Other countries of incorporation are mainly located in Asia and the Americas, the biggest by assets under management being China (EUR 188 bn), South Korea (EUR 54 bn) and Brazil (EUR 42 bn).

## Europe

Money market funds in Europe – where existent – have traditionally been governed by national market practices and legislation. However, the gradual integration of national financial markets under the umbrella of the European Union certainly helped to develop a cross-border market for asset management, e.g. by introducing the UCITS directive<sup>8</sup>. In mid-2012, over 75% of the assets managed by euro area money market funds adhered to the EU's UCITS regulation.<sup>9</sup> Harmonization of specific rules for money market funds was stepped up as a reaction to the financial crisis: in 2010, the "CESR Guidelines on a common definition of European money market funds" introduced a set of

<sup>6</sup> Money Market Funds in Europe and Financial Stability (2012). European Systemic Risk Board. Occasional Paper Series, No. 1, June 2012.

<sup>7</sup> Worldwide Investment Fund Assets and Flows (2014). European Fund and Asset Management Association (EFAMA). International Statistical Release, October 2014.

<sup>8</sup> UCITS (Undertakings for Collective Investment in Transferable Securities) are investment funds established and authorised in conformity with the requirements of Directive 85/611/EEC. This directive has been revised in 2009 (Directive 2009/62/EC) and is currently under revision again.

<sup>9</sup> European Systemic Risk Board (ESRB) (2012). Annex to ESRB Recommendation on money market funds, December 2012.



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rules to be followed by all funds labelling themselves as money market funds in the EU.<sup>10</sup>

### CESR's common definition of European money market funds

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In May 2010, CESR (now ESMA) published guidelines on a common definition of European money market funds. A money market fund must pursue the objective to maintain the principal of the fund, to provide a return in line with money market rates and to allow daily redemptions and purchases. Investments are restricted to high-quality money market instruments or bank deposits. Two different types of funds with varying maturity profiles were defined: Short-Term MMFs (STMMFs) and other MMFs. At least two-thirds of euro area money market fund assets are managed by STMMFs. Other MMFs – with a slightly longer investment horizon – make up the rest of the market.\*

	Short-Term MMF	Other MMF
Amortized cost accounting for	Assets with less than 3 months to maturity or entire portfolio	Assets with less than 3 months to maturity
Net Asset Value (NAV)	Constant or variable	Variable
Weighted Average Maturity (WAM) of securities held by a fund; measures fund assets' sensitivity to interest rate changes**	60 days max.	6 months max.
Weighted Average Life (WAL) of each security held in a fund; measures credit and liquidity risk**	120 days max.	12 months max.
Maximum residual maturity of a money market instrument until legal redemption	397 days	2 years
Minimum rating required (either issued by credit rating agency (CRA), or generated by fund manager's internal rating process)	One of the two highest available short-term rating grades by each recognized CRA that rates the instrument	See left. For instruments issued by an EU sovereign or authority: investment grade

\*European Systemic Risk Board Annex to ESRB Recommendation on money market funds, December 2012.

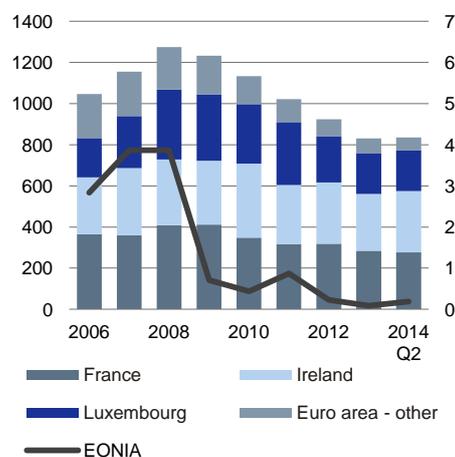
\*\*When calculating WAM, maturity is defined as the time remaining until the next interest rate reset date. When calculating WAL, though, the life of a floating rate instrument is the time left until it has to be redeemed.

Source: Committee of European Securities Regulators (now ESMA) CESR's Guidelines on a common definition of European money market funds, May 2010

### Euro area MMFs are mostly domiciled in France, Ireland and Luxembourg

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MMF assets in EUR bn, left scale  
EONIA in % p.a., right scale



Sources: ECB, national central banks, Deutsche Bank Research

Even though the EU might be called “one jurisdiction” in terms of asset management regulation, other aspects ranging from tax rules to national market practices still provide for a diverse picture of the European money market fund industry. By and large, Europe is in fact a split market. On the one hand, there are EUR-denominated VNAV funds domiciled in France. On the other hand, there are US-style CNAV funds domiciled in Luxembourg or Ireland, most of which are denominated in USD or GBP.

All in all, there are 776 money market funds in the euro area and another 126 funds in other EU member states. Assets managed by money market funds domiciled in the euro area amounted to EUR 835 bn in June 2014. Funds incorporated in France, Ireland and Luxembourg made up 92% of the market. In the early and mid-2000s, money market funds in these countries thrived in a benign environment of growing non-bank financial intermediation and quite high money market rates (EONIA<sup>11</sup> between 2% and 4%) – until 2009 Q1, when assets under management peaked. Investors did withdraw a significant amount of money in the fall of 2008 – when Lehman Brothers defaulted – but net sales of MMF shares at the beginning of 2009 compensated for these redemptions.

Instead, ultra-low interest rates in the aftermath of the crisis seem to be the main reason for the outflows money market funds have seen in most quarters since then. The low interest rate environment (with short-term rates even being

<sup>10</sup> Committee of European Securities Regulators (now ESMA) (2010). CESR's Guidelines on a common definition of European money market funds, May 2010.

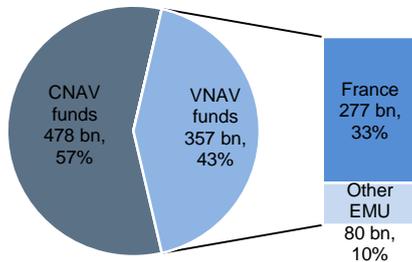
<sup>11</sup> Euro Overnight Index Average: A measure of the effective interest rate prevailing in the euro interbank overnight market. It is calculated as a weighted average of the interest rates on unsecured overnight lending transactions denominated in euro, as reported by a panel of banks.



## Money market funds – an economic perspective

### CNAV funds take lead over VNAV funds 7

AuM in EUR bn, share in total AuM in %, 2014 Q2



Sources: BdF, ECB, IMMFA, Deutsche Bank Research

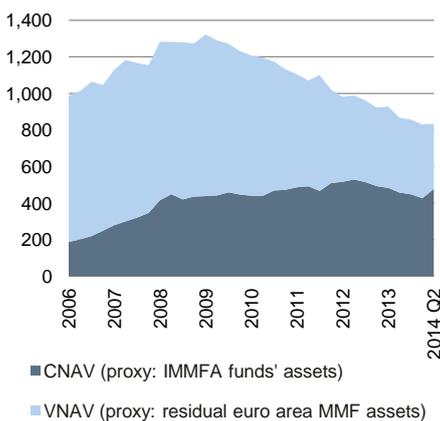
negative sometimes) dramatically reduces the funds' ability to earn returns for their investors.

On top of an interest rate-driven asset decrease, the introduction of a harmonized European definition for money market funds by CESR (now ESMA) in 2010 diminished the number of funds classified as such. Between mid-2011 and the first quarter of 2012, when statistical reporting had to be aligned with the new definition, this caused an estimated reduction in money market funds' assets under management of EUR 194 bn<sup>12</sup>, somewhat smoothed by sizeable net inflows triggered by a temporary rate hike during the same period.

In Europe, both CNAV and VNAV money market funds are popular. Figures provided by the Institutional Money Market Fund Association (IMMFA) can serve as a proxy for the volume of CNAV funds.<sup>13</sup> For June 2014, IMMFA reported assets of EUR 478 bn for a total of 134 money market funds adhering to its standards<sup>14</sup>, which thus accounted for 57% of total euro area MMF assets. Money market funds based on CNAV calculation must comply with CESR's (ESMA's) requirements for short-term money market funds (STMMFs). In the euro area, CNAV funds are mostly domiciled in Ireland or Luxembourg, where they are the prevailing type of money market fund.

### CNAV funds gained traction in shrinking market 8

Assets, EUR bn

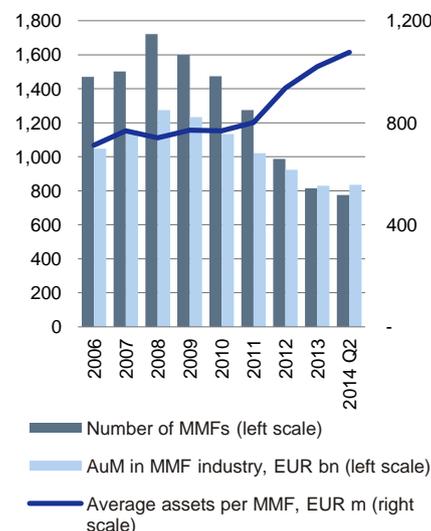


Sources: ECB, IMMFA, Deutsche Bank Research

France, by contrast, is the dominant domicile of VNAV funds in the euro area. French VNAV funds are managed as both STMMFs (37% as of end-2013)<sup>15</sup> or other MMFs. VNAV funds are also typical for the other euro area countries, apart from Ireland and Luxembourg.<sup>16</sup> This means that VNAV funds account for about 43% of total money market fund assets in the euro area, with French funds alone representing a 33% market share. Over the past few years, VNAV funds experienced a substantial reduction in asset volumes and a loss of market share compared to CNAV funds (see graph 8).

An obvious reason for the relative growth of CNAV money market funds is the decline in French – VNAV – money market funds' assets. This might be driven by investors' search for returns above recent EUR money market rates.<sup>17</sup> Besides, anecdotal evidence points to a growing popularity of CNAV funds with institutional investors. They seem to appreciate the easy handling of CNAV funds in terms of taxation and accounting.<sup>18</sup>

### Consolidation in euro-area MMF industry 9



Sources: BdE, ECB, Deutsche Bank Research

The euro area money market fund industry is consolidating. The number of funds in the euro area has been diminishing since the onset of the financial crisis. Besides, the strict CESR requirements for money market funds caused numerous funds to exit the statistics between 2010 and 2012. The strongest driver of consolidation, though, is again the low money market rates. The returns that fund managers can earn under these conditions are barely enough to allow for the nominal preservation of investors' capital. As a consequence, fund managers have reduced or even waived<sup>19</sup> already low management fees. Average fund sizes have been growing from EUR 700 m in 2006 to EUR 1 bn in 2014. This happened despite an overall decline in the industry's assets, underlining that consolidation is under way. Given the cost pressure in a scale business, consolidation is set to continue.

<sup>12</sup> European Central Bank Monthly Bulletin, April 2012.

<sup>13</sup> IMMFA represents the Europe-domiciled triple-A rated CNAV MMF industry. See IMMFA code of practice, <http://www.immfa.org/>.

<sup>14</sup> Institutional Money Market Fund Association IMMFA Money Fund Report, June 13, 2014.

<sup>15</sup> Autorités des marchés financiers Economic and Financial Newsletter, 2014-01.

<sup>16</sup> ESRB, Annex to ESRB Recommendation on money market funds, December 2012.

<sup>17</sup> Autorités des marchés financiers Economic and Financial Newsletter, 2014-01.

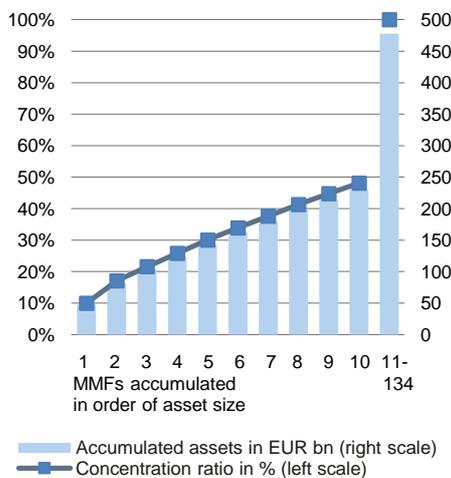
<sup>18</sup> Fitch Ratings European Treasurers Using CNAV MMFs Value Clarity, April 13, 2013.

<sup>19</sup> Fitch Ratings 2014 Outlook: Money Market Funds, December 2013.



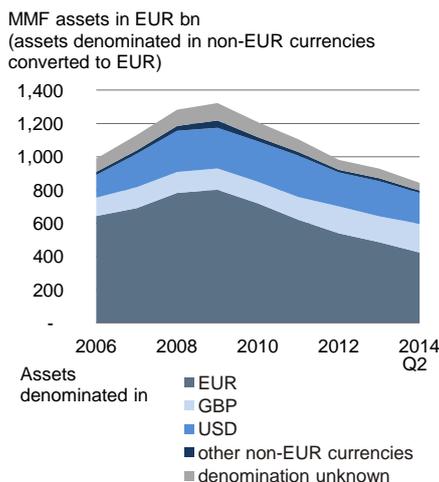
## Money market funds – an economic perspective

**10** IMMFA universe: ten biggest MMFs account for 48% of total IMMFA assets  
June 2014



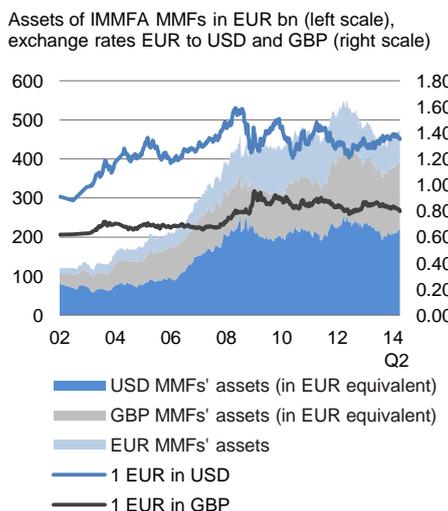
Sources: IMMFA, Deutsche Bank Research

**11** Euro-area MMF industry's base currencies are EUR, USD and GBP



Sources: ECB, Deutsche Bank Research

**12** CNAV funds: Mostly USD and GBP



Sources: IMMFA, Deutsche Bank Research

Concentration ratios for the money market fund industry in the euro area illustrate how scale matters in this business. Looking at the 134 CNAV funds represented by IMMFA, the five largest manage 30% (or EUR 141 bn) of this segment's total assets. The largest 10 funds account for 48% (EUR 226 bn) of the IMMFA universe.<sup>20</sup> Interestingly, the top 10 CNAV funds by assets are all denominated in USD or GBP rather than in EUR.

Looking at the industry as a whole, i.e. including VNAV funds, the top five money market funds in 2012 managed 18% of the industry's assets. Measured at group level, concentration was even much higher with the top five fund management groups accounting for 41% of total assets.<sup>21</sup>

By mid-2014, a remarkable 45% of euro area money market fund assets were held in foreign currencies. 50% of assets were denominated in EUR and the remaining 5% are not reported by currency. USD and GBP are the dominant foreign currencies: 22% of the industry's assets are held in USD, 21% in GBP and about 1% in other foreign currencies (e.g. CHF, JPY).

IMMFA funds (i.e. mainly CNAV funds) held 83% (EUR 398 bn) of their assets in USD and GBP in June 2014. 92% of all GBP-denominated assets in the euro area MMF industry are managed by funds domiciled in Ireland, whereas USD-denominated assets are found predominantly in both Ireland- and Luxembourg-domiciled funds. In contrast to these two countries where foreign currency funds dominate, the money market fund industry in France is mostly based on EUR.<sup>22</sup> The same holds true for Germany, Italy and Spain.<sup>23</sup>

In investing, money market funds seem to avoid significant currency mismatches.<sup>24</sup> Even though CESR/ESMA guidelines as well as the IMMFA code of practice<sup>25</sup> allow money market funds to invest in non-base currency securities if the exposure is hedged, money market funds by and large stick to one currency for issuing shares and investing the money received.

There are several apparent reasons for the big share of non-EUR assets in euro area money market funds. A substantial part of MMF shares are held by "foreign" (non-euro area resident) investors. In the EMU as a whole, in 2014 Q2, 46% of all money market fund shares were owned by investors who are not euro area residents. The share of non-resident investors differs considerably across Europe, though. In Ireland, non euro area investors hold 85% of all money market fund shares<sup>26</sup>, whereas in France 96% of the shares are owned by domestic investors.<sup>27</sup>

One explanation is that British investors held 46% of all IMMFA assets in 2010<sup>28</sup> suggesting that "British" money market funds are usually domiciled in Ireland rather than in the UK. Even though the UK is an important location of fund management, UK domiciled money market funds only managed assets of GBP 5.6 bn in 2014 Q2<sup>29</sup>. At the same time, half of the Irish money market fund volume was denominated in GBP.<sup>30</sup>

Investments by multinational firms also help explain the currency mix of the euro area MMF industry. Multinational companies usually manage their cash at

<sup>20</sup> Institutional Money Market Fund Association IMMFA Money Fund Report, June 6, 2014.

<sup>21</sup> ESRB, Annex to ESRB Recommendation on money market funds, December 2012.

<sup>22</sup> Autorité des Marchés Financiers, GECO database, July 2014.

<sup>23</sup> ESRB, Annex to ESRB Recommendation on money market funds, December 2012.

<sup>24</sup> Ibidem.

<sup>25</sup> Institutional Money Market Funds Association Code of Practice, November 2012.

<sup>26</sup> Central Bank of Ireland Credit, Money and Banking Statistics, database.

<sup>27</sup> Banque de France Souscriptions nettes de titres d'OPC – France, Stat Info, March 2014.

<sup>28</sup> ESRB Occasional Paper, 2012.

<sup>29</sup> Investment Management Association (IMA) Funds under management by asset class (UK domiciled funds), 2014.

<sup>30</sup> In 2014 Q2, Irish MMFs had invested 54% of their assets in GBP denominated securities and loans. Central Bank of Ireland Credit, Money and Banking Statistics, database.

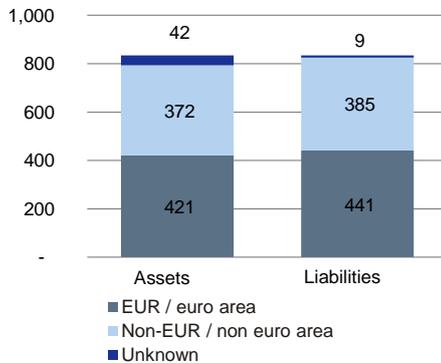


## Money market funds – an economic perspective

### Asset denomination and origin of investors

13

Assets in EUR bn by original currency, liabilities in EUR bn by investors' home region, 2014 Q2



Sources: ECB, Deutsche Bank Research

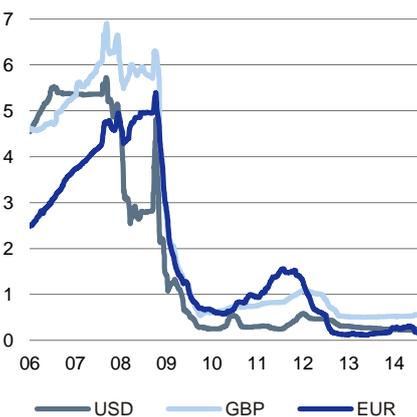
regional or even global level using sophisticated cash management tools and policies. This includes holding short-term cash balances in certain countries or currencies, e.g. because of expected returns in terms of yield and exchange rate variations.

Finally, the yield development may have driven down the share of EUR denominated assets in the euro area's MMF industry. Compared to GBP and USD, the euro money market has been especially demanding for fund managers since mid-2012, driven not least by several interest rate cuts by the ECB. Very low returns might have discouraged EUR investors much more from investing in money market funds than investors with GBP or USD surpluses, thus propping up the non-EUR share in the industry's assets. Moreover, French MMF investors in particular – who are focused on EUR – seem to be willing to reallocate money away from money market funds to higher yielding alternatives<sup>31</sup>, reinforcing the reduction of euro-denominated money market fund assets. Overall, the ECB has observed an investor move towards non-euro area instruments and euro area bond funds, driven by the low euro area money market rates.<sup>32</sup>

### Different money market rates in EUR, GBP and USD

14

3 month LIBOR in %



Sources: WEFA, Deutsche Bank Research

### Who receives funding from euro area MMFs?

Money market funds in the euro area provide predominantly short-term funding to other financial intermediaries rather than to the government, corporate or household sectors. The industry channelled 78% (650 EUR bn) of its funds to the MFI sector in mid-2014, which includes 4% going to other money market funds. Investments in banks were made mostly by buying debt issued by banks (58%) as well as by depositing funds or granting loans (16%). In addition, money market funds placed 8% of their assets in government debt.

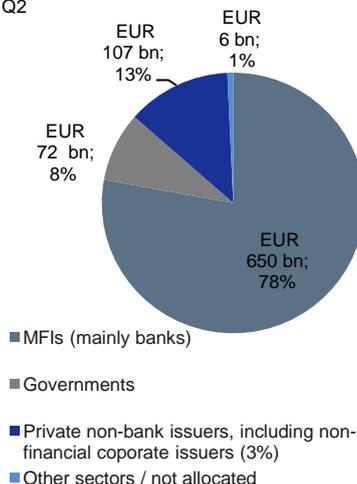
Debt securities issued by private companies other than MFIs accounted for 13% of money market fund assets. Within this share, only 3% of total MMF assets were invested in non-financial corporate debt. Other financial intermediaries captured 4% of total money market funds' investments, 6% went to foreign non-bank private issuers. Since 2006, when data collection on MMFs started, the sectoral allocation of funds has not changed much. However, investments in banks grew and investments in other private debtors declined slightly over time.

Almost a mirror-image of the investor base, the MMFs' regional portfolio allocation was almost balanced between euro area and "foreign" exposure with a slight overweight of the former in mid-2014. More exactly, allocations to the banking, government and private sectors separately were more or less split evenly between euro area and foreign debtors. EUR and non-EUR denominated MMFs show different geographical investment patterns, though. EUR denominated MMFs, on the one hand, invest primarily in debt issued by euro area residents (over 70%). Non-EUR MMFs, on the other hand, focus predominantly on issuers from outside the euro area.

### Banks attract most of MMF investments

15

Euro area MMF assets by debt issuing sector, 2014 Q2



Sources: ECB, Deutsche Bank Research

### MMF footprint in short term funding markets

Money market funds had invested mostly in money market instruments (64%) like commercial papers or certificates of deposit, according to the ESRB's 2012 survey. Repurchase agreements (9%) were almost exclusively concluded with other MFIs. ECB figures for 2012 more or less matched these survey results, but provided fewer details. Unfortunately, there is no update of the ESRB survey, but the ECB's rather high level data series suggest that money market

<sup>31</sup> Fitch Ratings European MMF Quarterly – 2Q14, 23 July 2014.

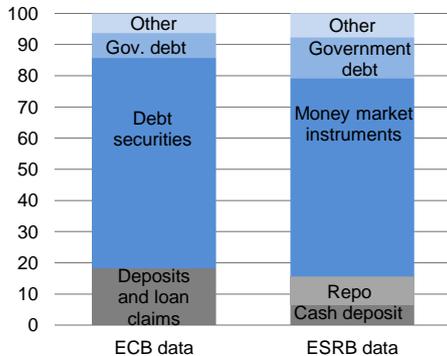
<sup>32</sup> ECB Financial Stability Report, November 2014.



## Money market funds – an economic perspective

### Euro area MMF assets by instrument 16

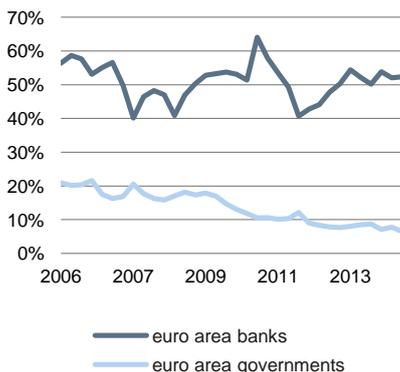
Percentage share in total MMF assets by financial instrument, all data 2012-Q2



Sources: ECB, ESRB, Deutsche Bank Research

### MMFs important for short term funding of euro area banks and governments 17

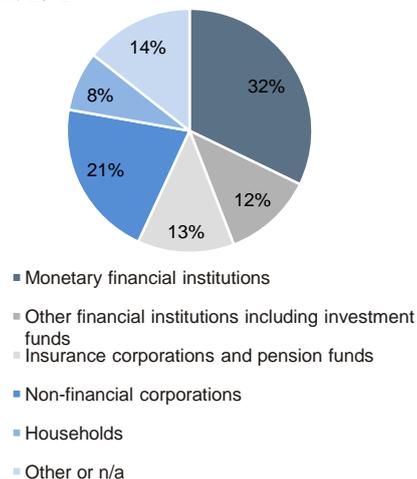
Euro area MMF holdings as % of total short-term debt securities outstanding by type of issuer



Sources: ECB, Deutsche Bank Research

### Financial firms biggest investors in MMFs 18

Share in total liabilities of euro-area MMFs, June 2012



Sources: ESRB, Deutsche Bank Research

funds have not changed their portfolio allocation significantly since 2012. Recent and more detailed portfolio data are provided by rating agencies, but their analyses do not comprise the entire euro area money market fund industry. Nonetheless, portfolio data of Fitch Ratings suggests that money market funds invest over 80% of their assets in the financial sector, including about 10% in the form of repurchase agreements and asset-backed commercial paper.<sup>33</sup> Admittedly, the outstanding volume of asset-backed commercial paper in Europe was a modest EUR 15.7 bn in mid-2014, which is only about one-tenth of the US market size.<sup>34</sup>

Money market funds are an important source of unsecured short-term funding for euro area banks. MMF investments in debt securities issued by euro area banks equal 52% of these banks' total short term debt securities of EUR 516 bn (2014 Q2), ECB data shows. Looking at EUR denominated funding only, euro area MMF investments total 58% of the EUR 347 bn short-term debt issued by euro area banks. As regards the EUR 169 bn of short-term bank debt denominated in foreign currencies, the respective euro area MMF holdings represent 45%. By contrast, the significance of money market funds in the market for short-term government debt has declined over the past few years. MMF investments in government debt now only represent 6% of the EUR 624 bn in short-term securities issued by euro area governments in EUR and other currencies.<sup>35</sup> Money market funds also own 42% of the EUR 67 bn in short-term debt securities issued by non-financial companies resident in the euro area. However, this is a rather modest contribution to the short-term funding needs of these firms, compared to EUR 1.1 tr in outstanding short-term bank loans to non-financial companies.<sup>36</sup> Moreover, only large corporations may have easy access to capital market finance. Finally, in the European repo market, money market funds are only of minor importance with an estimated market share of around 3% in secured cash lending to banks.<sup>37</sup>

Overall, as money market funds usually invest in their base currency, it is obviously the EUR denominated MMFs that leave a meaningful footprint in short-term euro funding markets.

### Who invests in euro area MMFs?

The most important investor group for euro area MMFs is financial institutions. However, there is no detailed and current statistics on all euro area MMF liabilities by investor sector available. According to the ESRB survey conducted in June 2012, euro area MMFs collected most of their funds from the financial sector. About 32% of MMF shares were held by monetary financial institutions (mostly banks) and 25% by insurance companies, pension funds, investment funds and other financial institutions. Non-financial sectors contributed almost one-third of investments in MMFs (corporations 21%, households 8%).<sup>38</sup> The study revealed major national differences regarding the investor base. Households, for example, held virtually no shares in Irish funds but the majority of shares in Italian and Spanish funds. Banks were an important investor group across all domiciles except for France, hence mostly in CNAV money market funds.

<sup>33</sup> Fitch Ratings European MMF Quarterly – 2Q14, 23 July 2014.

<sup>34</sup> Association for Financial Markets in Europe, Securitization Data Report Q214.

<sup>35</sup> 91% of the short term debt issued by euro area governments is denominated in EUR. MMFs' holdings in EUR (non-EUR) denominated debt amount to 6% (10%).

<sup>36</sup> ECB, Statistical Data Warehouse, MFI loans. Both securities and loans are predominantly denominated in EUR, but the figures also include other currencies.

<sup>37</sup> DBR estimation based on data provided by ICMA's European Repo Market Survey June 2014, ECB and Fitch Ratings.

<sup>38</sup> ESRB, Annex to ESRB Recommendation on money market funds, December 2012.

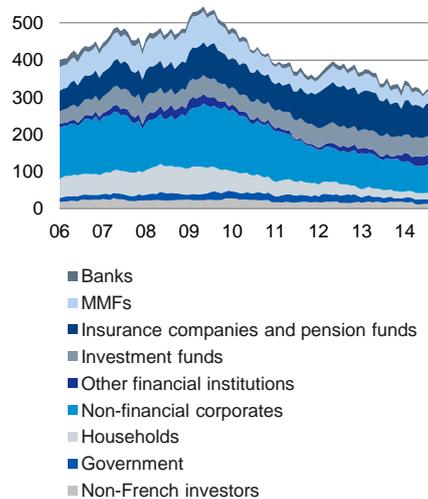


## Money market funds – an economic perspective

### Non-banks invest in French MMFs

19

Liabilities of MMFs domiciled in France, in EUR bn, by sector of investor

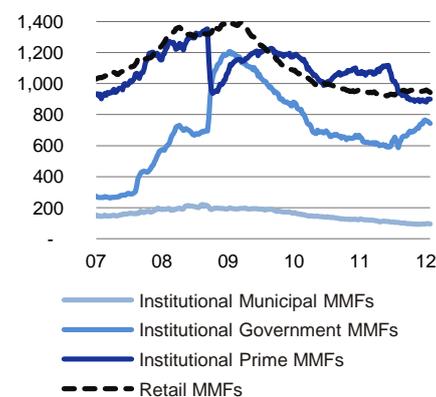


Sources: Banque de France, Deutsche Bank Research

### Institutional investors' run on US prime funds after Lehman collapse

20

Assets in USD bn, 1/2007 - 1/2012



Sources: ICI / Haver Analytics, Deutsche Bank Research

For VNAV funds, there is more exact data on the sectoral composition of investors available. As most VNAV funds are domiciled in France, data provided by the Banque de France on French money market funds are a good proxy. Most investors in French MMFs are domestic financial firms, with insurance companies and pension funds (26%) and investment companies (16%) being the biggest investor groups. Remarkably, banks only own 3% of French MMFs, while MMFs themselves hold 10% of the MMF industry's liabilities. Over the past few years, the sectoral composition of investors in French money market funds has evolved away from corporations and households to a higher participation of insurance companies, pension funds and investment funds.

When comparing data for French and all euro area money market funds, it is striking that most investments by money market funds in other money market funds are made by French funds.

## US

The US has the largest money market fund industry worldwide. When money market funds emerged in the 1970s (see graph 1), they were subject to existing US laws governing mutual funds.<sup>39</sup> In 1983, the SEC issued Rule 2a-7, an additional regulation aimed specifically at money market funds. This rule sets out portfolio requirements regarding credit quality, liquidity, maturity and diversification which are meant to help ensure a stable net asset value. This is important given that US money market funds traditionally market their shares at a stable price of one dollar (i.e., they are CNAV funds). To this end, they apply amortized cost accounting and must keep the mark-to-market portfolio value in line with the constant net asset value.<sup>40</sup> Over the years, the SEC tightened portfolio requirements for money market funds several times, most recently in 2010 and 2014, as a response to the run on US money market funds in 2008.

The collapse of Lehman Brothers on September 15<sup>th</sup>, 2008 triggered large withdrawals by institutional investors from prime money market funds. The outflows accelerated when the Reserve Primary Fund, a large MMF, announced it had "broken the buck" on September 16<sup>th</sup>. This meant that the fund's mark-to-market net asset value deviated from its constant net asset value by more than 0.5 cents and the fund's shares had to be re-priced to less than one dollar ("buck").

The massive redemptions from MMFs aggravated a severe funding shortage in US short-term credit markets, especially for ABCP and CP issuers, as MMFs had to shed assets quickly. In order to restore investor confidence in MMFs, the US Treasury announced a program on September 19<sup>th</sup> which guaranteed the share price of 1 USD for participating MMFs.<sup>41</sup> On the same day, the Federal Reserve created a facility which provided loans to commercial banks for purchasing eligible ABCP from money market funds.<sup>42</sup> This measure aimed at reviving the stalled ABCP market was deemed important for two reasons: on the one hand, to enable MMFs to sell ABCP holdings to meet redemption requests, and on the other hand, to help ABCP issuers to roll over their maturing papers. In October 2008, the Fed started to buy unsecured and asset-backed commercial paper directly from eligible issuers.<sup>43</sup> Over the following weeks,

<sup>39</sup> In the US, money market funds are often referred to as money market mutual funds ( MMMF).

<sup>40</sup> "Money Market Mutual Funds, Risk, and Financial Stability in the Wake of the 2010 Reforms", Investment Company Institute (ICI) ICI Research Perspective, Vol. 19 No.1, January 2013.

<sup>41</sup> Treasury's Temporary Guarantee Program, see US Treasury, "Treasury Announces Guarantee Program for Money Market Funds", Press Release, September 19, 2008.

<sup>42</sup> Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), see Federal Reserve, "The Federal Reserve Board announces two enhancements to its programs to provide liquidity to markets", Press Release, September 19, 2008.

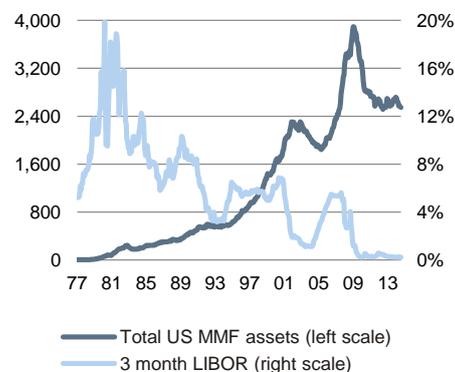
<sup>43</sup> Commercial Paper Funding Facility (CPFF), see Federal Reserve, "Board announces creation of the CPFF to help provide liquidity to term funding markets", Press Release, October 7, 2008.



## Money market funds – an economic perspective

### Money market yields and MMF growth 21

Assets in USD bn, LIBOR in %



Sources: WEFA, Deutsche Bank Research

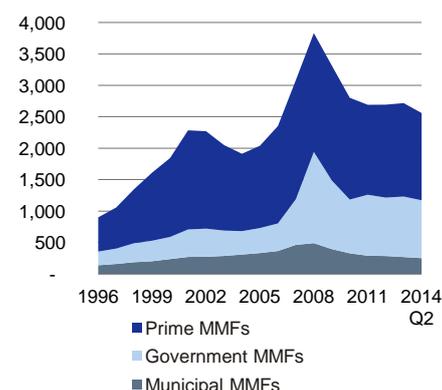
these emergency facilities helped to stabilize investors' confidence in MMFs as well as in CP and ABCP markets.<sup>44</sup> In 2010, the facilities were terminated.

The 2014 amendment to Rule SEC 2a-7 is especially meant to reduce the risk of runs and will bring a fundamental change in US money market fund regulation: starting in 2016, money market funds for institutional investors will have to base their share prices on the variable net asset value (VNAV), unless they are classified as government MMFs. Besides, the board of a money market fund will be entitled to impose liquidity fees or redemption gates to address runs in times of stress.<sup>45</sup>

Money market funds steadily attracted investments after their inception in the early 1970s, with growth accelerating in the 1990s. For investors, they offer money market yields as well as low risk and high liquidity. Money market rates are an important driver of the funds' development, albeit certainly not the only one. In 2005, after a period of monetary easing, US money market funds returned to growth, in line with rising interest rates. Assets totalled a record USD 3.9 tr in early 2009. The rate cuts after the financial crisis hurt the funds' profitability and led to a significant divestment. In mid-2011, though, assets under management stabilized at around USD 2.6 tr. Despite all-time low interest rates, this is well above pre-crisis levels. Obviously, money market funds are an attractive investment beyond the yield argument.

### US: m-than half of MMF assets in prime segment 22

MMF assets in USD bn



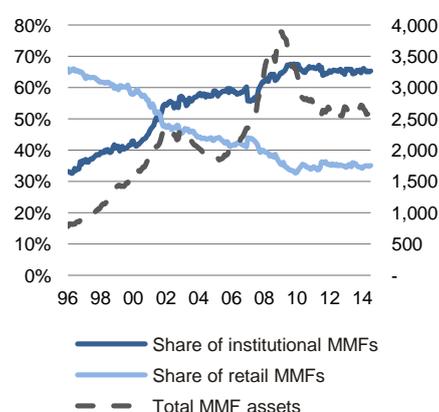
Sources: ICI / Haver Analytics, Deutsche Bank Research

US money market funds are classified based on investment focus, tax status and type of investor.<sup>46</sup> Prime MMFs invest *primarily* in money market instruments like high quality bank debt and other private debt, whereas government MMFs invest *only* in securities issued or backed by the US federal government or its agencies. Also, government money market funds engage in repurchase agreements fully collateralized with government paper. Counterparties are usually US banks or US subsidiaries of foreign banks. Proceeds to investors from prime and government funds are taxable. By contrast, earnings from shares in a third type of money market funds, municipal MMFs, are exempt from federal taxes. These so-called tax-exempt funds invest in debt issued by municipalities.

Prime funds have long accounted for over two-thirds of the US market. Government funds, though, gained assets and market share at the height of the financial crisis as investors perceived them as a safe haven. Prime funds now account for 55% of total money market fund assets. Government funds hold about one-third of total assets, and municipal funds a rather small 10%.

### Institutional MMFs overtook retail MMFs 23

Assets in USD bn (right scale)  
Share in total assets in % (left scale)



Sources: ICI /Haver Analytics, Deutsche Bank Research

In the US, money market funds are popular with retail investors. Funds which are sold to retail clients account for 35% of the industry's total assets (as of 2014 Q2).<sup>47</sup> Accordingly, money market funds for institutional investors make up 65% of the market. Two decades ago, though, the distribution of assets was the other way round. Since then, money market funds have seen a large influx of institutional money, so assets in this category are now six times the amount in 1996 despite the financial crisis. Retail funds also expanded but at a much slower pace. Thus, the tremendous growth of US money market funds was mainly driven by institutional investors.

Both institutional and retail investors preferably invest in prime money market funds. Regarding public debt, institutional investors concentrate on federal debt,

<sup>44</sup> For an overview of the Fed's policy responses please see Yorulmazer, Tanju (2014). Case Studies On Disruptions During The Crisis. Federal Reserve Bank of New York. Economic Policy Review, February 2014.

<sup>45</sup> SEC Adopts Money Market Fund Reform Rules. SEC, Press Release, July 23, 2014.

<sup>46</sup> For more detailed definitions, please see [www.ici.org](http://www.ici.org).

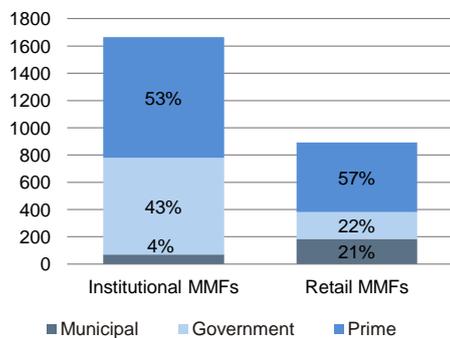
<sup>47</sup> According to Fed data, the share of household investors in US MMFs is 43%. The difference to ICI data, which we use here as it is more detailed, is due to methodological differences.



## Money market funds – an economic perspective

### Retail investors: stronger appetite for local public debt than institutional investors 24

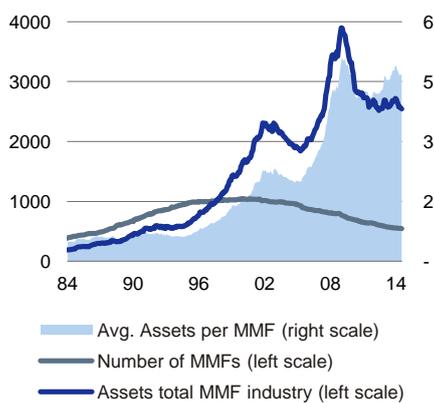
Assets, USD bn; 2014 Q2



Sources: ICI / Haver Analytics, Deutsche Bank Research

### Increase in average MMF size 25

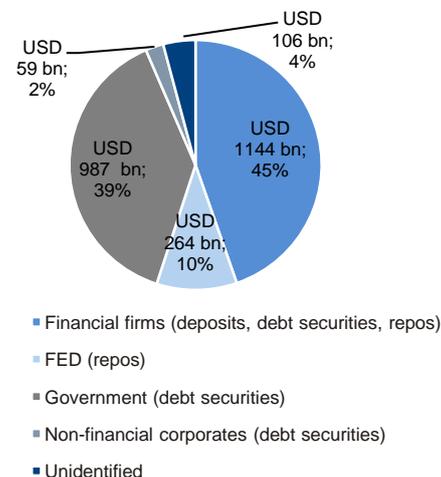
Assets, USD bn



Sources: ICI / Haver Analytics, Deutsche Bank Research

### US MMFs invest in financial firms and government debt 26

US MMF investments by (debtor) sector, 2014 Q2, USD bn and % of total



Sources: Fed, ICI, Deutsche Bank Research

whereas retail investors divide their investment between government and municipal money market funds into equal shares.

The size of individual US money market funds can vary a lot, with a fund's assets below USD 1 bn or up to over USD 100 bn.<sup>48</sup> Very small funds are sometimes offered as a complementary service in the product range of an asset management firm. The money market fund allows investors to place funds in transition in a highly liquid form. Overall, though, the industry sees a trend towards bigger funds.

Statistically, the average money market fund in the US manages USD 5 bn, ten times the amount 30 years ago (and considerably more than the average European MMF). In the early days, asset growth and the establishment of new money market funds went hand in hand. But again, size matters in this industry. In the mid-nineties, in fact, the number of money market funds stagnated while the inflow of investor money accelerated. In 2001, the number of money market funds started to trend downwards and continued to do so even when investors returned to increase their allocations to the industry in 2005. Before the financial crisis, a prime fund managed two to three times the amount of money as did a government or municipal fund. During the financial turmoil, the investors' flight to safety let the average government fund surpass the average prime fund in size. This abrupt change turned out to be a structural shift. Since then, both prime and government funds slightly surpass the industry's average fund size, whereas municipal funds only reach USD 1.5 bn on average.

Many US money market funds offer a set of different share classes to investors. These are defined by different fee structures and services or distribution arrangements attached to them. Nevertheless, all classes invest in the fund's single portfolio. Since late 2008, the total number of MMF share classes has been declining.

### Who receives funding from US MMFs?

The sectors receiving cash from US money market funds can be estimated from the industry's portfolio.<sup>49</sup> In mid-2014, 39% of its assets were invested in public debt (including municipal), and 32% in instruments issued by depository and other financial institutions. When adding investments in repos with bank counterparties, the private financial sector absorbed an estimated 45% of money market fund assets.<sup>50</sup> Repos with the Federal Reserve Bank of New York in addition accounted for about 10% of the funds' assets. The New York Fed offers an overnight reverse-repo facility to soak up excess liquidity.<sup>51</sup> Only 2% of money market fund assets were invested in securities issued by non-financial corporates. About 4% of the industry's assets cannot be related to a specific debtor sector.

<sup>48</sup> Fitch Ratings Money Market Funds Snapshot, February 2014.

<sup>49</sup> Portfolio data based on money market fund statistics by ICI, Fed Financial Accounts, Deutsche Bank Research calculations.

<sup>50</sup> Estimate based on the assumption that repos which are not concluded with the Fed can be mostly attributed to counterparties in the financial sector.

<sup>51</sup> The New York Fed conducts the "Overnight Reverse Repurchase Agreement Operational Exercise" on behalf of the Federal Open Market Committee (FOMC). See [www.newyorkfed.org/markets/](http://www.newyorkfed.org/markets/).

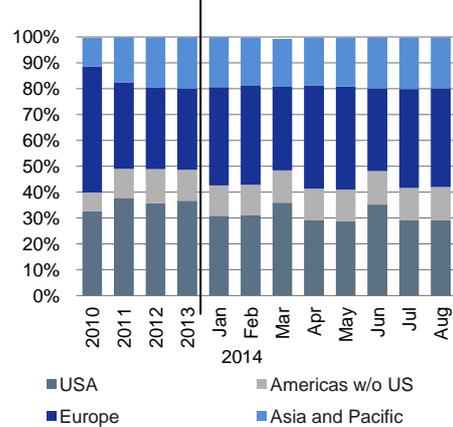


## Money market funds – an economic perspective

### Prime MMFs invest worldwide

27

Assets as % of total by region of debt issuer or repo counterparty



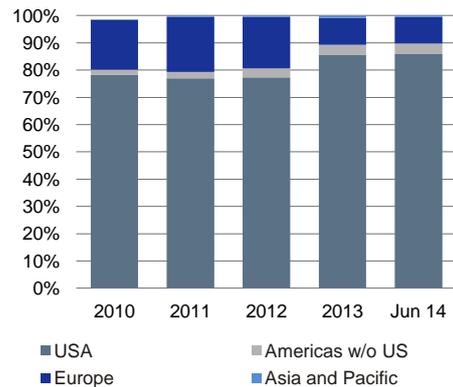
Sources: ICI, Deutsche Bank Research

US money market funds are required to invest in USD denominated instruments only. This still allows for foreign exposure, though. ICI statistics classify issuers and counterparties by the parent company's country of domicile, i.e. securities issued by a US domiciled but foreign-owned firm are assigned to the country of the parent firm's domicile. In mid-2014, prime money market funds only held about 35% of their assets in financial instruments issued by US firms or public entities (or in repos with these counterparties). Investments in European and Asian assets accounted for roughly 30% and 20% respectively. The remaining investments are mostly attributable to Canadian issuers.<sup>52</sup> However, this regional allocation is typical only for quarter ends. In other months, money market funds' European exposure is usually higher (around 40% of total assets) and domestic allocation (30%) lower. Potentially, European banks are systematically shrinking their short-term funding at quarter-ends in light of Basel III requirements.<sup>53</sup> Holdings of government funds show a similar quarter-end pattern, albeit to a lesser extent as these funds invest over 80% of their money in domestic assets and only take on foreign exposure by means of repos with non-US counterparties. All taxable (i.e. prime and government) money market funds have reduced their exposure to Europe since 2010, when the collection of data on the funds' holdings by region started. Unsurprisingly, prime funds with their substantial holdings of European securities reacted more pronouncedly to the European sovereign debt crisis than did government funds.

### Government MMFs: domestic focus

28

Assets as % of total by region of debt issuer or repo counterparty



Sources: ICI, Deutsche Bank Research

Assuming that municipal funds' holdings are predominantly domestic, the US money market fund industry in total channels about 60% of its resources to US(-owned) entities. Including US operations of foreign firms, however, this share would be considerably higher.

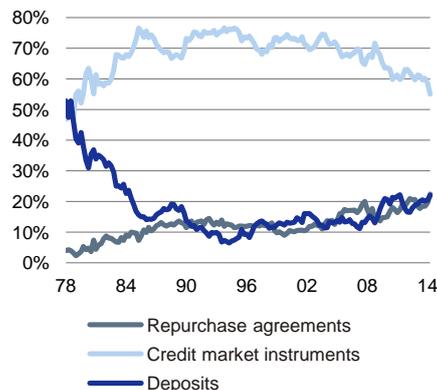
### MMF footprint in short-term funding markets

For a long time, US money market funds kept their portfolio composition quite stable. Since the introduction of Rule SEC 2a-7 in 1983, credit market instruments accounted for about 70% of money market funds' investments, with the remaining assets being split between repurchase agreements and deposits. After the financial crisis, though, money market funds reduced their investments in credit market instruments to about 60% of their assets, and increased their portfolio allocation to repos and deposits to about 20% each.

### US MMFs invest mostly in debt securities

29

Share of asset class in total US MMF assets (%)



Sources: Fed, Deutsche Bank Research

For taxable money market funds, available data allows a more detailed look at the portfolio composition. Obviously, government money market funds invest in federal and agency debt, and engage in repos collateralized by these securities. Prime money market funds are more diversified, with certificates of deposit and commercial paper being their biggest investments. Public debt represents only a small share of their assets. However, prime funds prefer repurchase agreements collateralized by public debt securities to repos collateralized by private debt.

<sup>52</sup> ICI money market fund statistics.

<sup>53</sup> Plantier, Ch. (2014). European Banks Significantly Reduced Borrowing from U.S. Money Market Funds in June. ICI viewpoints, July 2014.



## Money market funds – an economic perspective

### Taxable MMFs' holdings by instrument 30

Assets in USD bn, 2014 Q2

	Gov.	Prime	Sum
Certificate of deposit	0	535	535
Commercial paper	2	339	342
<i>Asset-backed CP</i>	0	90	90
<i>Financial CP</i>	0	193	193
<i>Other CP</i>	2	57	59
Gov. agency debt	266	56	322
Municipal debt	1	27	29
Repo	327	263	590
<i>Gov. agency repo</i>	90	59	149
<i>Treasury repo</i>	237	122	358
<i>Other repo</i>	0	82	82
Treasury debt	322	62	384
Other	1	105	106
<b>Total assets</b>	<b>920</b>	<b>1387</b>	<b>2307</b>

Sources: Fed, ICI, Deutsche Bank Research

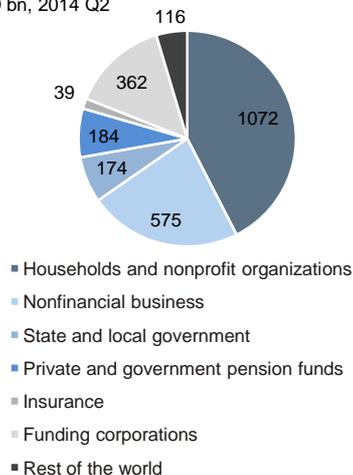
Overall, credit instruments held by money market funds only represented 4% of all credit instruments outstanding in the US in 2014 Q2. Nevertheless, money market funds with their USD 2.5 tr assets under management are important intermediaries in short-term funding markets. The latter had a volume of an estimated USD 11 tr in the US in 2013, across various instruments.<sup>54</sup> Money market funds are crucial providers of funding for the commercial paper market, they held 34% of the amount outstanding in mid-2014. Also, MMFs are sizeable lenders in the repo market with a 15% share. Tax-exempt money market funds managed USD 253 bn in assets, which equalled 8% of all municipal bonds outstanding.<sup>55</sup> According to 2012 figures, money market funds in addition held 29% of all certificates of deposit outstanding.<sup>56</sup>

### Who invests in US MMFs?

Flow of funds statistics reveal the sectors which place cash with US money market funds. Households (including nonprofit organisations) are the single biggest sector, owning 43% of the funds' shares.<sup>57</sup> Non-financial businesses hold 23% of total MMF shares. Financial companies also allocate cash to money market funds (23%). However, depository institutions hardly invest at all in money market funds. Government entities own 7% of money market fund shares, foreign investors officially only account for 5%. Effectively, however, the share of foreign investment in US money market funds is higher. The flow of funds statistics do not capture the ultimate economic ownership of an entity (as does ICI). For example, a US subsidiary of a foreign financial firm is reported as a (domestic) "funding corporation" rather than "rest of the world".

### Most investors in US MMFs are domestic and non-financial 31

MMF shares held by sector, USD bn, 2014 Q2



Sources: Fed, Deutsche Bank Research

Money market fund shares make up only a small portion of the different sectors' total assets. But as an alternative to deposits, they are a popular investment type. In 2013, households (and nonprofit organizations) held 12% of their money-like savings<sup>58</sup> as money market fund shares. Non-financial businesses and the public sector both used MMF shares for about 23% of their money-like savings. For financial firms, this ratio was even higher.

## Contagion risk and regulatory developments

As a result of their business model, money market funds carry credit and liquidity risks. The financial crisis in 2008 showed that money market funds are vulnerable to investor runs in situations of financial stress. As in a bank run, the first redeemer will bear the smallest (or no) loss ("first mover advantage"). In the US, the loss of investor confidence quickly spread over an entire money market fund class, namely institutional prime funds. In turn, the MMFs' funding shortage infected those financial markets which depended heavily on investments by money market funds (counterparty channel). Also, MMF fire sales of assets to meet investor redemption requests sent asset prices down further, thus triggering margin calls affecting many other market participants (market channel). Finally, the Fed stepped in to support markets. Redemptions from

<sup>54</sup> US Treasury (2013). Office of Financial Research Annual Report 2013, pp. 50-56. Figure excludes retail bank deposits.

<sup>55</sup> Federal Reserve System, Financial Accounts and Deutsche Bank Research calculations.

<sup>56</sup> Cipriani, Marco et al. (2013). Money Market Funds Intermediation and Bank Instability. Federal Reserve Bank of New York Staff Reports, February 2013.

<sup>57</sup> For consistency reasons, we use the Fed's Flow of funds data for all investor sectors. MMF data provider ICI/Haver Analytics reports a lower figure (i.e., 35%) for households' investments in MMFs as its definition of "retail investor" is more restrictive than the definition of "household" used in the Flow of funds statistics.

<sup>58</sup> Defined as the sum of "checkable deposits and currency", "time and savings deposits", "foreign deposits" and "money market fund shares" as reported in the US Financial Accounts.



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euro area money market funds did not lead to an equally severe squeeze in short-term funding markets as in the US and did not trigger central bank intervention. However, as banks are the main borrowers from money market funds in the euro area, a shortage of funding by money market funds can more easily be compensated by the ECB's liquidity facilities for commercial banks. Apart from counterparty and market channels, financial distress in money market funds can also spread via a fund's sponsor. In case of a significant loss in NAV, e.g. caused by defaulting or depreciating assets in a fund's portfolio, the sponsor might inject money and spare the fund's investors a loss in order to avert reputational damage or even an investor run. However, such sponsor support, as seen during the crisis in both the European and US markets, can be a substantial drain on the sponsor bank itself.

Even though turmoil in the money market fund industry would first and foremost hit banks and other financial intermediaries as these are the main recipients of MMF funding, MMF problems can also have a wider impact on other sectors like the government, households and non-financial firms served by affected banks and other financial companies.

### Proposed EU regulation of money market funds

To address some of these vulnerabilities, the European Commission proposed a new regulation on money market funds in September 2013.<sup>59</sup> In order to mitigate the risk of an investor run, the proposal aims at improving the liquidity and stability of money market funds. Liquidity thresholds for daily and weekly maturing assets (minimum of 10% and 20% respectively of a fund's portfolio) as well as a requirement to actively monitor the redemption profile of the fund's investors are meant to improve the fund's ability to meet redemption requests. Moreover, concentration risk in a fund's portfolio is to be contained by exposure limits with regard to counterparties and financial instruments. CNAV funds, which regulators view as particularly prone to runs, will be required to hold a cash buffer of at least 3% of total assets in a separate account. This capital will be injected into the fund to maintain the CNAV if the mark-to-market NAV is lower. Beyond this, CNAV funds must not receive any external support in order to prevent contagion via a sponsor. VNAV funds will only be allowed to receive external (sponsor) support in defined exceptional circumstances and with consent of the relevant supervisory authority. Also, the proposed regulation calls for less reliance on external credit ratings and obliges funds to clearly state that there is no guarantee investors will always get back in full their invested capital. The regulation still needs to be endorsed by the European Parliament and the Council and an agreement may be reached by mid 2015.

If approved in the current form, the new rules would surely strengthen the resilience of MMF portfolios. But in case the industry nevertheless experiences a loss of investor confidence, mitigating the risk of an investor run would probably still be difficult. VNAV funds in tight financial conditions might still face accelerated redemption requests, and financial distress might still spread via counterparty or market channels. CNAV funds would be able to draw on a significant 3% capital buffer as a line of defense. However, pairing a CNAV with a capital requirement further blurs the difference between a mutual fund investment and a bank deposit. Also, introducing capital requirements may increase the concentration in the industry as it will become more difficult to generate a reasonable return.

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<sup>59</sup> European Commission, COM(2013) 615 final.



## Adopted US regulation of money market funds

In the US, the SEC had already issued tighter rules on portfolio liquidity and quality in 2010. In order to reduce the risk of runs further, the SEC introduced another amendment to Rule 2a-7 in July 2014<sup>60</sup>, the US legislation specifying the rules for money market funds. So far, the constant net asset value was a constituent characteristic of all US MMFs. Nevertheless, institutional prime and institutional municipal MMFs will have to change to VNAV by 2016, based on mark-to-market valuation. The SEC views this change as a step towards reducing the first mover advantage and the incentive to run in times of financial stress, as institutional investors in non-government funds did in 2008. Recognising that this measure does not eliminate the risk of runs, though, the SEC has also endowed the boards of asset management firms operating non-government money market funds with the discretionary right to impose a liquidity fee of up to 2% on all redemptions or to suspend redemptions for up to 10 days if the fund's level of weekly liquid assets falls short of the regulatory minimum of 30% of total assets. If the share of weekly liquid assets falls below 10%, the money market fund must impose a fee of 1% on all redemptions unless the fund's board of directors decides that no fee or a lower or higher (up to 2%) fee is in the best interest of the fund.

US regulators have thus chosen to treat MMFs as mutual funds instead of a close substitute for bank deposits – just as the name “money market mutual fund” and the legal setup suggests. The price of a fund's shares will be floating and potential losses will have to be incurred by investors in the form of a reduced share price. This will sharpen investors' monitoring of the fund quality. As a variable net asset value will not substantially reduce the risk of runs in times of financial distress – inherent in all open-ended mutual funds – the SEC rightly provided for liquidity fees and redemption gates. The idea of this is to bridge a liquidity shortage to meet redemptions without triggering fire sales of assets. Granting a fund time will build up its liquidity naturally as securities in the fund's portfolio mature. Of course, this is no remedy in case of defaulting assets. These measures are a rather tailored response to MMFs' role during the financial crisis and will probably strengthen the stability of short-term funding markets significantly. Nevertheless, excluding government MMFs from the regulation might distort the competition for capital between the private and the public sector, should US investors continue to prefer CNAV MMFs.

Both EU and US regulators have chosen comparable (not equal) approaches to strengthen MMFs. And a sound MMF industry is surely the first line of defence against an investor run. Portfolio requirements have been tightened especially regarding the maturity, liquidity and credit quality of MMF portfolios. This will reinforce each fund's and the entire industry's resilience, albeit at the price of reduced financial intermediation. Regrettably, the measures chosen to contain an investor run once a fund is perceived to be at risk will probably be very different in the EU and US markets.

## Conclusion and outlook

Money market funds act as financial intermediaries in short-term funding markets. However, their position in non-bank credit intermediation differs somewhat between Europe and the US.

In the euro area, money market funds are predominantly intermediaries within the financial sector. Close to two-thirds of the money invested in the industry comes from banks, investment funds, insurers, pension funds and other

<sup>60</sup> SEC Adopts Money Market Fund Reform Rules. SEC, Press Release, July 23rd 2014.



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financial companies. And money market funds, in turn, channel 78% of the cash received into bank debt and 10% into other financial sector debt. Of course, this still means that money market funds also channel savings especially from the corporate sector and to a small extent from households to the financial sector. Thus, euro area MMFs seem to be a link in a chain of credit intermediation involving several institutions including banks. Banks are the dominant players in this channel as they use money market funds (mostly CNAV) for short-term cash placement as well as for funding short-term payment obligations which include credit lines to clients in the non-financial sectors.

In the US, money market funds' direct intermediation of funds between different sectors is more pronounced. On the one hand, not even a quarter of investors in money market funds belong to the financial sector, and there is no noteworthy investment by depository institutions. On the other hand, US money market funds invest only about half of their cash in the financial sector, including banks. Thus, roughly half of the industry's business is direct financial intermediation between non-financial sectors. Households and non-financial firms contribute two-thirds of the industry's funds (43% and 23% respectively). The federal and local governments together with government agencies receive a sizable 39% of the cash invested by money market funds.

Money market funds in both the euro area and the US are involved in cross-border credit intermediation. In Europe – in spite of big national differences – they do about half of their business on both the asset and the liability side with “foreign” entities, i.e. investors and debt issuers not resident in the euro area. In the US, the industry also has exposure to foreign debt, but there is a stronger focus on the home market and the investor base is predominantly domestic.<sup>61</sup>

Despite the structural differences between the euro area and US markets – which together still constitute most of the global money market fund industry – there are some basic characteristics shared by all money market funds. From an investor's perspective, they are a financial service which offers money market returns while reducing risk through portfolio diversification. Besides, the pooling of individual savers' investments into large volumes allows for economies of scale. Another benefit can be the funds' investment expertise, which might be too costly to achieve for some investors, especially for households or medium-sized companies. Obviously, these advantages and the high liquidity of investments in MMFs are still very attractive features for investors even though low money market yields did hurt the popularity of money market funds in recent years.

The future development of money market funds will depend on the economic drivers underpinning the industry as well as on regulation. As money market funds match short-term cash supply with slightly longer-term cash needs, their business obviously depends on the overall supply and demand on money markets and the resulting yields. Looking at the asset side of money market funds, the industry will likely face lower short-term funding demand from banks due to Basel III: the liquidity coverage ratio<sup>62</sup> and the net stable funding ratio<sup>63</sup> will encourage banks to rely less on short-term funding as typically provided by MMFs. This might lead to bigger asset allocations by the MMF industry to debt issued by non-bank companies or governments. Also, asset backed commercial papers issued by vehicles engaging in maturity transformation might become more important. However, only highly rated debt is eligible for MMFs, which limits the funds' investment universe especially regarding private borrowers.

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<sup>61</sup> Here, residency means the actual entity's domicile, as opposed to the ultimate parent's domicile.

<sup>62</sup> Basel Committee on Banking Supervision (BCBS) (2013). Basel III: The Liquidity Coverage Ratio and liquidity monitoring rules. Bank for International Settlements (BIS), January 2013. The LCR is supposed to be fully implemented until 1 January 2019.

<sup>63</sup> BCBS (2014). Basel III: the net stable funding ratio. BIS, October 2014. The NSFR is supposed to be fully implemented until 1 January 2018.



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Given the current monetary policy stance, ample liquidity will probably continue to give high quality borrowers a strong position in money markets vis-à-vis creditors, resulting in low money market rates. Nevertheless, this holds true for all short term investments.

Basel III might also alter banks' involvement as parent companies of CNAV (though not VNAV) money market fund managers, as these will be classified as off balance sheet contingent liabilities to be factored into the LCR and NSFR. However, national supervisors will have discretion to decide on the actual factor at which such contingent obligation has to be calculated, if at all. It is not certain if and how this requirement will be implemented nationally and whether it will impact on the structure of the MMF market with regard to preferred countries of domicile as well as bank ownership of money market funds.<sup>64</sup> The pending EU regulation on MMFs will influence the final implementation of the liquidity requirement.

Regulation has altered – in the US – and will alter – in the EU – the service profile which money market funds can offer their investors and it remains to be seen if regulation will induce investors to change their investment decisions. An immediate alternative to investments in money market funds are bank deposits – especially for households. Institutional investors, on the other hand, have a range of short-term investment options beyond MMFs, including short-term bond funds, separate money market accounts<sup>65</sup> and direct investment in money market debt securities. Repo lending and borrowing – traditionally dominated by bank counterparties – could see more treasuries of financial and non-financial companies entering the market, albeit this is only a viable option for very large institutions due to operational hurdles.

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<sup>64</sup> Ibidem, article 140 (LCR) / article 47 (NSFR).

<sup>65</sup> A large investor might place a big investment sum in a separate, individual account and agree with the account management company on specific conditions, e.g. as regards the portfolio's risk profile or the investor's withdrawal rights.