

20 May 2011

Secretariat of the Financial Stability Board
c/o Bank for International Settlements
CH-4002
Basel
Switzerland

Dear Sirs

Shadow Banking: Scoping the Issues

Please find attached IMMFA's response to the FSB paper 'Shadow Banking: Scoping the Issues'. Our response deals specifically with the position of money market funds (MMFs).

IMMFA is the trade association which represents the European triple-A rated money market funds industry. Triple-A money market funds are managed according to rigid and transparent guidelines, in order to offer safety of principal, liquidity and competitive money market returns. Increasingly, these funds are used by institutional investors to manage liquidity and act as important alternatives to cash accounts. Since its inception in 2000, IMMFA's funds in Europe have grown from around €40 billion to over €460 billion (as at March 2011). Further information on the association and triple-A rated funds are available on the IMMFA website, www.immfa.org.

Our response goes behind the immediate question of whether a MMF is a 'shadow bank' or part of a shadow banking system, and looks at why MMFs exist, why they suffered redemptions in 2008, the systemic consequences of those redemptions, and possible enhancements that would make future redemptions less likely. These issues inform the current tendency to describe MMFs as part of a 'shadow banking system' (a description that we disagree with), and it is therefore important that they are made explicit and discussed.

In summary:

MMFs exist to enable investors (in particular institutional investors, such as corporate treasurers) to manage credit risk through diversification. This is a legitimate function, and indeed provides systemic benefits.

Turning to the specific issues raised by the FSB paper, we disagree with the description of MMFs as shadow banks. MMFs are prohibited from employing leverage. The only thing they share in common with a bank is that they transform liquidity, but they do so on a tiny scale and subject to rigorous constraints. The FSB uses the broad concept of a shadow banking system, i.e. whilst MMFs may not themselves be shadow banks, they are part of a system that engages in shadow banking activities. The description given of the shadow banking system is highly extended. But at its root is off-balance sheet bank-sponsored conduits. If the objective of the FSB is to move such conduits back onto bank balance sheet, then we think it should address that issue directly, rather than invoke the concept of a shadow banking system.

Our response is organized as follows:

Section one Background

Section two Shadow banking

Appendix A Definition of CNAV MMF

We would welcome the opportunity to discuss these matters with you in more detail.

Yours faithfully

A handwritten signature in black ink, appearing to read "Travis Barker", followed by a period.

Travis Barker
Chairman, IMMFA

Section one: background

What is a money market fund?

For the purposes of this paper, a MMF is defined as: a collective investment scheme, whose investment objective is to provide investors with security of capital and daily liquidity, and which seeks to achieve that objective by investing in a diversified portfolio of high quality, low duration money market instruments.

A 'prime MMF' invests in money market instruments issued by prime creditors, notably bank deposits and commercial paper; a 'treasury MMF' invests in money market instruments issued by governments, notably the US Treasury; and a 'government MMF' invests in money market instruments issued by government agencies which enjoy varying degrees of support from their governments.

US-domiciled MMFs are regulated by Rule 2a-7 of the Investment Company Act of 1940. Rule 2a-7 imposes detailed obligations on MMFs.

EU-domiciled MMFs are regulated, at a European level, by the Undertakings for Collective Investments in Transferrable Securities Directives (UCITS Directives). The UCITS Directive is a broad piece of legislation, which does not impose detailed obligations on MMFs, equivalent to Rule 2a-7. Therefore, in 2010, the Committee of European Securities Regulators (CESR, now succeeded by the European Securities and Markets Authority, ESMA) issued guidelines which sought to define MMFs more closely. CESR's definition of a 'short term' MMF is somewhat similar to Rule 2a-7, though remains significantly less detailed.

In the absence of a European definition of MMFs that is as detailed as Rule 2a-7, the Institutional Money Market Funds Association (IMMFA) maintains a Code of Practice, which is binding on its Members, and imposes obligations equivalent to 2a-7 on their EU-domiciled funds. In addition, certain Member States of the European Union impose detailed obligations on locally-domiciled MMFs, notably in France in relation to 'monétaire funds'.

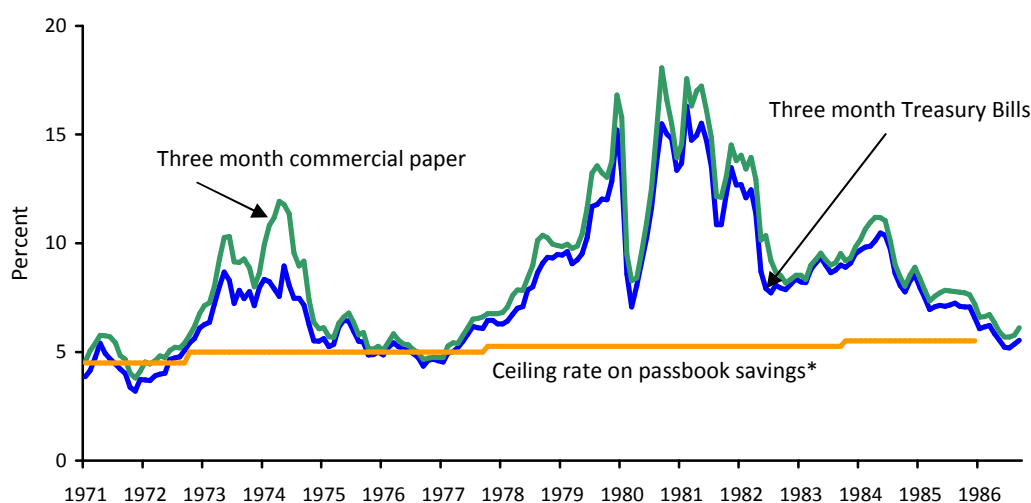
An 'enhanced' MMF is defined as a fund which takes more credit and/or duration risk than would be permitted by Rule 2a-7, and therefore aims to provide a higher yield than a MMF but at the potential expense of security of capital and/or daily liquidity.

Why do money market funds exist?

As defined above, the objective of a MMF is to provide investors with security of capital and daily liquidity. But, in principle, investors are able to achieve that objective directly, by depositing their cash with banks: so, why do they use MMFs?

Until the 1980s, the nominal interest rate payable on US deposits was limited by Federal Reserve Regulation Q. In the 1970s, the US inflation rate exceeded the regulated nominal interest rate by a material amount and for a protracted period, and so depositors received a negative real interest rate which economically eroded their capital. In those circumstances, an indirect investment in the money markets via a MMF was more likely to ensure a positive real interest rate and the preservation of their capital.

Annual yields on Commercial Paper, Treasury Bills and Passbook Savings



*Ceiling rates were phased out by March 1986
 Sources: Federal Reserve Bank of St. Louis and Federal Reserve Board

Regulation Q, which was enacted in response to the Wall Street Crash, intended to stop banks from aggressively/uneconomically bidding for deposits. It didn't anticipate the high rates of inflation experienced in the 1970s. It was progressively restricted during the 1980s, and ultimately repealed by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. From 21 July 2011, banks will be allowed, but not required, to offer interest-bearing checking accounts. It is expected that this will reduce demand for retail MMFs in the USA.

MMFs exist outside of the USA, where there was no equivalent of Regulation Q, and even within the USA they are expected to retain substantial assets under management notwithstanding the repeal of Regulation Q. And the reason is simple enough: MMFs enable investors to manage credit risk.

The cash assets of many investors (including, in particular, institutional investors such as corporate treasurers) are in excess of the amount guaranteed by deposit insurance schemes. Therefore, the deposits of such investors are exposed to the credit risk of their deposit bank.

Most institutional investors manage that credit risk by only depositing with an approved panel of banks, and up to an approved limit. Those approvals are set out in a 'treasury policy', and enable an institutional investor to preserve capital through diversification amongst strong counterparty credits. But there are resource constraints on the amount of diversification that an institutional investor can achieve on its own, including: credit resources (to distinguish relatively strong from relatively weak banks) and operational resources (to match the term of fixed deposits with the investors cash flow needs, and to roll those deposits). For many institutional investors, it makes sense to 'outsource' those credit and operational tasks *via* a MMF. Many investors also have transitory cash with their custodians that offer daily 'sweep' mechanisms to MMFs to ensure effective utilisation of these balances where the application of more complex treasury policies would be impractical.

In summary, then, MMFs are used by investors – and in particular by institutional investors – to meet their legitimate need to manage credit risk through diversification.

We believe two things follow from this:

- First, because MMFs exist to meet a legitimate economic need (and not, as some commentators have suggested, as a means to avoid regulatory capital, or banking regulation), then any reform of MMFs should be proportionate. It would not be proportionate to reform MMFs in a manner that made them uneconomic, or disadvantaged them relative to direct investment; and
- Second, if MMFs were reformed in a disproportionate manner and, as such, became unusable by investors, then we believe either: investors would seek to meet their legitimate need to manage credit risk through unregulated schemes; or would alternatively manage that risk not through diversification, but by contrast through the concentration of their deposits in banks they consider 'too big to fail'. Neither outcome would be satisfactory from a systemic perspective.

How were MMFs impacted by the events of 2008?

MMFs have grown, slowly but steadily, in the USA since the 1970s.

Outside of the USA – and excepting France – their adoption was initially led by the overseas subsidiaries of US multi-national corporations, looking for a 2a-7 like investment option. But ultimately MMFs have been adopted by local institutional investors throughout Europe, and increasingly in Asia. (There has been limited adoption by retail investors, whose deposits are typically guaranteed by Central Banks and who, therefore, do not need to manage credit risk through diversification.)

During those decades of growth, MMFs have navigated without incident: periods of growth and recession; periods of high and low inflation; accommodative and restrictive monetary policy; spikes in interest rates; currency crises; corporate and bank failures. They have proven to be extremely robust, and consequently attracted relatively little regulatory attention or comment (except a general recognition that their existence has been essential to the development of the market for commercial paper) until 2008.

On 15 September 2008, Lehman Brothers filed for bankruptcy. That same day, The Reserve Primary Fund (a 2a-7 prime fund with assets of USD62bn), experienced significant redemptions from shareholders concerned about its USD785m exposure to Lehman. On 16 September, The Reserve wrote-off the value of its exposure to Lehman, and on 17 September it closed to further redemptions.

At the time of the Lehman bankruptcy, other events had already undermined investor confidence in the prime credit market, notably: on 7 September the US Government put Fannie Mae and Freddie Mac into receivership; on 13/14 September, Bank of America Corporation agreed to buy Merrill Lynch for USD50bn; and on 16 September the Federal Reserve agreed to lend American International Group up to USD85bn.

This general loss of confidence in the credit market, and the specific events at The Reserve, caused significant redemptions from all 2a-7 prime funds (and, indeed, from non-US MMFs): between 15-19 September, 2a-7 prime funds experienced USD369b (17.9%) redemptions.

The high volume of redemptions forced MMFs to sell assets in an attempt to raise cash to make redemption payments, and to maintain a short duration within their portfolios in anticipation of further redemptions. This was systemically consequential for two reasons:

first, it caused a further withdrawal of liquidity from the markets, and so further funding pressure to the banking sector; and second, if the redemptions had continued, 2a-7 prime funds would have reached a point when they would have been forced to suspend or at least impose redemption gates *en masse*, which would have caused investors to turn to the already-stressed banking system for their liquidity needs.

Therefore, on 19 September, and to avoid those outcomes, the Federal Reserve announced two measures:

- *The Temporary Guarantee Programme for Money Market Funds*, which temporarily guaranteed account balances in certain 2a-7 funds; and
- *The Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility*, which provided finance to purchase high-quality ABCP from 2a-7 funds.

A further measure was then announced in October:

- *The Commercial Paper Funding Facility*, which provided backstop finance to purchase three-month unsecured commercial paper and ABCP directly from eligible issuers, including 2a-7 funds.

Those measures successfully alleviated redemption pressure on 2a-7 prime funds, and helped to sustain the market for ABCP and CP, notwithstanding further turbulence in the credit markets throughout September/October 2008.

MMFs outside of the USA also experienced redemptions, although not on the same scale, except for enhanced cash funds, which experienced very heavy redemptions.

What systemic issues do money market funds give rise to?

Banks have failed before, without causing widespread redemptions from MMFs. For example: in 2007, the near-failure of Bears Stearns in the USA, and Northern Rock in the UK didn't cause a 'run' on MMFs. Equally, a single MMF has 'broken the buck' before, without causing a mass of redemptions from its peers. For example: in September 1994, the U.S. Government Money Market Fund managed by Community Bankers suffered a credit event without causing a general run on all government MMFs. What was different about the failure of Lehman and The Reserve in September 2008?

The key difference is that the failure of Lehman and The Reserve occurred at time when there were widespread concerns about the solvency of *large parts of the entire banking sector*. Since prime MMFs invest a significant part of their portfolios in bank debt, largely reflecting the dominance of bank issuance in the money market, it is unsurprising that investors sought to redeem their holdings, for fear that they would become illiquid or impaired. Those same investors also declined to roll over, or sold, their direct exposure with banks for fear that any exposure would become illiquid or impaired.

Looked at in this way, MMFs are no different to any other collective investment scheme, i.e. investors in prime MMFs redeemed because they lost confidence in prime credit assets, in the same way that, say, investors in small cap equity funds might redeem from time to time because they think that asset class is overpriced. However, whereas investors lose and then regain confidence in small cap equity in a cyclical manner, it is very unusual for them to lose confidence in prime credit issuers as a whole.

It is also worth noting that a material amount of the money redeemed from prime 2a-7 MMFs was reinvested in treasury 2a-7 MMFs. In other words, there wasn't a run from MMFs *per se*; rather investors sought to 'switch' their exposure from prime MMFs to treasury MMFs. The switch came to an end when the Federal Reserve's 'Temporary Guarantee Programme' effectively made prime credit as good as treasury credit. The money invested in treasury 2a-7 MMFs in part enabled the Federal Reserve to provide liquidity back to the illiquid banking sector, so in a manner the 'system' worked. But its working caused significant dislocations and ultimately relied on taxpayer support. Therefore, the potential for enhancement of MMFs is, quite properly, under discussion.

On the basis of these observations, we propose the following description of the systemic issues that MMFs give rise to:

If investors lose confidence in large parts of the banking system, then prime MMFs may face high levels of redemptions. In those circumstances:

- Redemptions from prime MMFs will cause a withdrawal of funding from the banking system. This is systemically consequential insofar as redemptions from prime MMFs may counter-act the efforts of central banks to contain the crisis by providing emergency liquidity to the banking system; and
- Prime MMFs may be unable to generate enough cash to meet redemptions payments and may be forced to suspend or 'gate' redemptions. This is systemically consequential insofar as it may force gated investors to turn to the already-stressed banking system for liquidity.

Other parties have proposed an alternative narrative of the cause of redemptions from prime MMFs. Their narrative says that the pricing structure of constant net asset value (CNAV) MMFs means that first redeemers get out for a dollar and concentrate losses amongst remaining investors, and, therefore, all investors are incentivised to redeem and none to remain, i.e. the CNAV pricing structure is inherently prone to runs and so increases systemic risk. According to this narrative, if CNAV MMFs adopted a variable net asset value (VNAV), they would no longer reward first redeemers at the expense of remaining investors, and would therefore be less prone to runs and less systemically risky. Appendix A provides a definition of a CNAV MMF.

We disagree with this narrative. In 2008, both CNAV and VNAV MMFs experienced heavy redemptions. For example, US enhanced cash, French 'dynamique' and German 'optical' funds all have a variable price, but experienced significant redemptions. To be clear: we are not making any particular criticisms of those VNAV funds. We are merely observing that redemptions were not limited to CNAV MMFs and, therefore, the pricing structure of MMFs cannot have been the cause of those redemptions.

A simple survey of press headlines during the time of the crisis makes it abundantly clear that investors redeemed because they lost confidence in the banking sector as a whole, rather than because of any first redeemer advantage.

We acknowledge the potential of first redeemers to concentrate losses amongst remaining investors in a CNAV MMF is a serious issue. But we disagree that the concentration of losses amongst remaining investors was a cause of redemptions: rather, it was an effect of such redemptions.

How might the systemic risk be mitigated?

A number of proposals have been made to mitigate the systemic risks posed by MMFs, including: withholding part of a MMF's net income to act as a buffer against losses; increasing the capital requirement of MMF managers; converting MMFs into 'special purpose banks'; requiring MMFs to purchase insurance against credit losses; requiring MMFs to impose a levy on redemptions in prescribed circumstances; requiring MMFs to make *in specie* redemptions in prescribed circumstances; establishing a liquidity bank to provide the MMF industry with access to the discount window; requiring MMFs to 'float' the price of their shares; and bi-furcating the MMF industry between low-risk fixed-price funds, and high-risk floating-price funds.

The Board of IMMFA is exploring those suggestions with our Members, and hopes to finalise a position shortly.

We have however already made a number of amendments to the investment parameters within which IMMFA MMFs operate. These amendments, which impose requirements designed to address all material sources of risk within the product (credit, interest rate, liquidity and operational risk), are intended to deliver a more robust and resilient MMF which is capable of operating in stressed situations without any risk transmission to other parts of the financial system. We consider these changes to have fundamentally improved the product, and whilst we will continue to explore further possible enhancements, we believe the changes made to-date are significant and assist in mitigating systemic risks.

Section two: shadow banking

The FSB report 'Shadow Banking: Scoping the Issues' identifies three objectives:

- To clarify what is meant by the 'shadow banking system';
- To set out potential approaches for monitoring the shadow banking system; and
- To explore possible regulatory measures to address the systemic risk and regulatory arbitrage concerns posed by the shadow banking system.

We respond to those objectives below.

What is meant by the shadow banking system?

The FSB defines the shadow banking system as: 'a system of credit intermediation that involves entities and activities outside the regular banking system, and raises i) systemic concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or ii) regulatory arbitrage concerns.'

Exhibit 1 to the report provides a diagram of the shadow banking system, which shows MMFs as distributors in the credit intermediation chain, i.e. the FSB regards MMFs as part of the shadow banking system. We'd therefore like to comment on the application of the definition of shadow banking to MMFs.

MMFs and maturity/liquidity transformation

MMFs perform liquidity transformation, insofar as investors' subscriptions are invested at term, but investors have the right to redeem same-day. However, the liquidity transformation performed by MMFs is an order of magnitude less than that performed by banks, and is subject to tight controls. For example, in the case of IMMFA funds subject to our revised Code of Practice:

- A maximum final maturity per instrument of 397 days;
- A maximum weighted average life of 120 days;
- A maximum weighted average maturity of 60 days;
- A minimum 10% of the portfolio available in cash/overnight; and
- A minimum 20% of the portfolio maturing within one week.

Furthermore, each IMMFA fund is required to have a 'liquidity policy' explaining how they manage liquidity. For example, that policy might deal with issues like investor concentration.

So, although MMFs do perform liquidity transformation, they do so subject to tight controls, and consequently their liquidity mismatch is modest (especially when considered relative to the magnitude of maturity transformation conducted by a typical bank).

MMFs and leverage

MMFs are expressly prohibited from employing leverage.

Alternatively it has been suggested that although MMFs are not leveraged themselves, they invest in issues who are leverage and so enable leverage to occur. In particular, MMFs invest in:

- Banks, whose leverage is subject to regulation;
- Government and Treasury paper, whose leverage is excluded from the shadow banking debate;
- Commercial paper, although commercial paper is also usually excluded from the shadow banking debate (presumably for political reasons);
- Repo, although the IMMFA Code of Practice requires repo to be collateralized provided the rating of the counterparty is at least A1, P1 or F1; and
- Asset-back conduits, although we note the FSB has specifically included such conduits in its definition of shadow banking and so it seems likely the ability to employ leverage will be regulated at some future point.

MMFs and flawed credit risk transfer

'Flawed credit risk transfer' is mentioned in the FSB report (page 4 '...flawed credit risk transfer through securitisation...') but not defined. So we cannot comment on whether MMFs enable flawed credit risk transfer.

MMFs and being 'bank like'

Prominent members of the FSB have criticised MMFs as being too 'bank like'. Although those criticisms are not repeated in the FSB paper on shadow banking, it appears to have informed the debate, and so is worth examining in the context of whether MMFs should be considered part of the 'shadow banking' system.

Paul Tucker, Deputy Governor of the Bank of England, has said¹:

"On both sides of the Atlantic, many [MMFs] are so-called Constant Net Asset Value (CNAV) funds. Stripping through the detail, this means that they promise to return to savers, on demand, at least as much as they invest. Just like a bank."

Paul Volker, former Chairman of the Federal Reserve, has said²:

"Money market mutual funds wishing to continue to offer bank-like services, such as transaction account services, withdrawals on demand at par, and assurances of maintaining a stable net asset value (NAV) at par should be required to reorganize as special-purpose banks, with appropriate prudential regulation and supervision, government insurance, and access to central bank lender-of-last-resort facilities."

As described earlier in this paper, the investment objective of a MMF is to provide investors with security of capital and daily liquidity. To the extent it achieves that objectives, the

¹ <http://www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf>

² <http://www.group30.org/pubs/recommendations.pdf>

economic return to an investor will be similar to that of a bank. But that is not because MMFs are 'bank-like'. Rather, it is because MMFs and bank deposits are both forms of money. Specifically, MMFs are included within the broad measure of money, M3. Central Banks have long known about MMFs, conceptualised them as part of the broad money supply, measured and monitored them as such, and described them as 'look through' vehicles. We see no reason to abandon that prior practice, in favour of the vague (and rather rhetorical) expression 'shadow banking'.

MMFs are regulatory arbitrage

It has been alleged that MMFs exist in order to arbitrage regulation.

For example, it has been alleged that US MMFs evolved to circumvent Regulation Q (as described earlier in this paper). However, Regulation Q was in force for many decades before US MMFs evolved, and MMFs exist outside of the US where there is no equivalent of Regulation Q. It therefore follows that Regulation Q is neither a necessary nor sufficient explanation for the existence of MMFs.

Alternatively, it has been alleged that MMFs exist to arbitrage bank maturity mismatch rules (e.g. by depositing with banks at term, even though MMF investors can redeem same-day) and bank capital rules (e.g. by investing in asset-backed conduits which are not subject to bank prudential regulation). We note that the maturity mismatch rules in Basel III would address the first concern, and assume that the FSB recommendations on asset-backed conduits will address the second.

In any event, we reject the allegation that MMFs exist to enable regulatory arbitrage. As described earlier in this report, MMFs exist to enable investors to manage credit risk through diversification. That is a legitimate objective, which has systemic benefits (i.e. it is prima facie evidence that investors do not believe any one institution is 'too big to fail').

Conclusion: MMFs and shadow banking

The only substantial economic similarity between MMFs and banks is that they both engage in liquidity/maturity transformation (although the degree of transformation by MMFs is an order of magnitude less than that performed by banks, and is subject to tight constraints). In all other regards, MMFs and banks differ, in particular because MMFs cannot employ leverage. Indeed, because of their lack of leverage MMFs were never originally considered to be part of the shadow banking system, which was first described by Paul McCulley of PIMCO to comprise "...the whole alphabet soup of *levered up* non-bank investment conduits, vehicles, and structures."³

We do not believe the description of MMFs as shadow banks has any substantial analytical meaning. Therefore, we would discourage the FSB from applying this phrase to MMFs: at best it is rhetorical and misleading, and at worst it lends implicit support to the proposal that MMFs should be subject to bank-like regulation (see below).

Whilst MMFs and bank deposits can both be described as forms of money, MMFs cannot in any sustainable sense be described as a form of bank.

The FSB uses the broad concept of a shadow banking *system*, i.e. whilst MMFs may not themselves be shadow banks, they are part of a system that engages in shadow banking

³ <http://www.pimco.com/LeftNav/Featured+Market+Commentary/FF/2007/GCBF+August-+September+2007.htm>

activities. The description given of the shadow banking is highly extended. But at its root are bank-sponsored off-balance sheet conduits. If the objective of the FSB is to move such conduits back onto bank balance sheet, then we think it should address that issue directly, rather than invoke the concept of a shadow banking system.

Approaches for monitoring the shadow banking system

The FSB paper notes the importance of monitoring the shadow banking system.

As noted above, we do not believe MMFs can be described as ‘shadow banks’ in any meaningful sense. Nevertheless, we recognise that the FSB, Central Banks and regulators may legitimately wish to monitor MMFs, given their importance to the broader financial system. Central Banks have long collected data on MMFs in the context of measuring M3. Also, since the financial crisis, we have additionally sent monthly data sets to the European Central Bank, Bank of England and European Commission.

Please note that MMFs are highly transparent vehicles. Like all mutual funds, they provide investors with regular factsheets and, typically, with portfolio holdings reports. We would be happy to arrange for that data to be shared with the FSB and other relevant agencies.

Possible regulatory measures

The FSB paper notes: ‘Shadow banking includes a variety of activities and entities. As a result, a single regulatory approach for all components of the shadow banking system is unlikely to be desirable’.

Although the FSB paper does not recommend a regulatory approach to MMFs, prominent members of the FSB have already concluded that MMFs should either be subject to ‘bank like’ regulation, or alternatively required to convert to a variable net asset value, VNAV. We assume those members will influence the FSB to adopt those conclusions, in anticipation of which we make the following observations:

Subjecting MMFs to ‘bank like’ regulation

Paul Tucker and Paul Volker have both proposed that MMFs should be subject to ‘bank like’ regulation. In the absence of explaining precisely which bank regulations they believe should be imposed on MMFs, it is hard to either agree or disagree with their proposal.

However, we note profound differences between the legal and economic structure of banks and MMFs which suggest it would probably be a mistake to subject MMFs to bank regulation:

Bank shareholders make a profit on the spread they earn between interest payments to depositors, and interest receipts from creditors. They are incentivised to maximise profit by maximising that spread, i.e. by making risky loans. That creates a potential conflict of interest between shareholders and depositors. Bank regulation manages that conflict by imposing capital charges that increase with the riskiness of a bank’s loans to its creditors.

MMFs have a completely different incentive structure. The shareholders and depositors of a MMF are, in effect, one and the same, i.e. the investor in a MMF bears all the risks and rewards of the fund’s investments. A MMF manager is remunerated on the basis of a fee, in a fund which cannot appreciate in value. Although conflicts of interest exist between the manager and the investor, those conflicts are quite different from those that exist in a bank.

Furthermore, whereas banks invest money held on their balance sheets, MMF managers invest client money. Consequently, securities law that applies to MMF managers tends to be much more prescriptive than bank regulation.

Requiring CNAV funds to convert to VNAV

Three reasons have been given for requiring CNAV MMFs to convert to VNAV:

First, it has been argued that CNAV funds are ‘bank-like’, i.e. because their objective is to provide investors with security of capital and daily liquidity. If they converted to VNAV, then investors would be much less certain of achieving security of capital and, to that extent, they would become less bank-like. As pointed out above, MMFs are a form of money and so it is perfectly reasonable for them to seek to provide investors with security of capital and daily liquidity. MMFs are not bank-like. Rather, MMFs and bank deposits are money-like.

Second, it has been argued that CNAV MMFs create a ‘first redeemer’ advantage, which would be removed if those funds converted to VNAV. As described above, we do not believe the first redeemer advantage explains or that VNAV would have mitigated redemptions from MMFs in 2008.

Third, it has been argued that daily fluctuations in the price of VNAV funds desensitises investors to losses and therefore makes them loss prone to redeem in a financial crisis.

There is no evidence in support of this argument. Indeed during the financial crisis we observed heavy redemptions from CNAV 2a-7 funds and VNAV enhanced cash funds, and comparative stability in CNAV IMMFA EUR funds and semi-VNAV French monétaire funds. In other words, we cannot observe any correlation between the pricing structure of a MMF and whether or not it experienced redemptions.

We believe that the variability of the price on CNAV in benign market conditions is so small, that it would not meaningfully desensitise investors to the much larger losses attributable to credit events in stressed market conditions.

Indeed, one could argue that CNAV funds are *less* susceptible to runs than VNAV funds precisely because they can absorb up to 50bps of the ‘noise’ in mark-to-market pricing (such as that created by the dislocation of Libor in 2008), whereas VNAV funds communicate all mark-to-market movements directly to investors, increasing the likelihood of a run. No doubt efficient market purists would argue that all such price signals should be communicated to the market; but we assume systemic regulators might regard the communication of such signals in a dislocated market as unhelpful, insofar as it causes reactions which frustrate their attempts to restore confidence.

Please note that IMMFA funds prepare their financial statements according to International Financial Reporting Standards, which require mark-to-market pricing, but nevertheless still result in a constant NAV per share due to the immateriality of the difference between the CNAV and the shadow price. In other words, if CNAV funds were required to convert into VNAV funds, they would also be required to adopt pricing policies more sensitive than those in IFRS. This would be a surprising development, since, in other contexts, regulators are debating whether IFRS results in too much price sensitivity.

Finally, there is a significant body of research by the Investment Companies Institute, and supported by investor representations to the Securities and Exchange Commission, that converting CNAV MMFs to VNAV would render them largely unusable. If one believes MMFs

exist to arbitrage regulation, then this might be considered a desirable outcome. But if one believes MMFs exist to meet the legitimate need of institutional investors to manage credit risk through diversification, as we have argued in this paper, then such an outcome would be wholly disproportionate.

Appendix A

Definition of CNAV MMFs

Constant net asset value (CNAV) MMFs

CNAV MMFs are best understood by way of example:

Assume a newly formed CNAV fund issues 1m shares upon receipt an initial subscription of USD1m, and invests the subscription in a diversified portfolio of short term, high quality money market instruments.

At T0, the mark-to-market value of the portfolio is USD1m, and therefore the share price, which is calculated to two decimal places, is USD1.00 ($1,000,000/1,000,000$).

At T1 the mark-to-market value of the portfolio falls by 1bps to USD999,900. The net asset value per share therefore falls to 0.9999 ($999,900/1,000,000$). But since the shares are priced to two decimal places, the share price rounds up to USD1.00.

At T2 the mark-to-market value of the portfolio increases by 3bps to USD1,000,200. The net asset value per share therefore increases to 1.0002 ($1,000,200/1,000,000$), but, once again, because the shares are priced to two decimal places, the share price remains at USD1.00.

As will be apparent from the above, the share price will only change from USD1.00 if the mark-to-market value of the portfolio either increases or decreases by 50bps. If it the mark-to-market value falls by 50bps, then the rounded share price will fall to USD0.99; and if the mark-to-market value increases by 50bps, then the rounded share price will increase to USD1.01. These scenarios are described as 'breaking the buck'. In the thirty-year history of CNAV MMFs, two funds have broken the buck (once in 1994, and a second time in 2008).

The most common cause of changes in mark-to-market value is changes in interest rates (or changes in expected interest rates) which impact the value of fixed income securities held by MMFs. Also, the mark-to-market value may change because of concerns about the credit worthiness of specific issuers held by the fund. MMFs managers therefore spend a lot of time managing interest rate and credit risk, and stress testing the sensitivity of their portfolio to shifts in the yield curve (a measure of interest rate risk) and widening in spreads (a measure of credit and liquidity risk).

Studies by the Investment Companies Institute and Standard & Poor's show that the mark-to-market value of MMFs rarely changes by more than a handful of basis points. Indeed, the only events that have caused CNAV MMFs to break the buck are defaults. Again, continuing the example above:

At T3 the fund experiences a default by an issuer representing 3% of its portfolio. Assuming the defaulted issuer is unlikely to make any payment to its creditors, the mark-to-market value of the portfolio falls by 300bps to USD970,200. The net asset value per share therefore falls to 0.9702 ($1,000,200-30,000/1,000,000$) and the share price falls to USD0.97, breaking the buck in the process.

That, in essence, is how CNAV MMFs maintain a constant price.

Please note that the description of a fund as a CNAV MMF is a term of art, used by the industry to distinguish this form of MMF from VNAV MMFs. All MMFs' prospectuses make

clear that – like any other investment fund – they can lose value. Investors have no recourse, per se, to the manager of the fund in a break the buck event (potentially subject to whether the breaking of the buck occurred because the manager failed to meet his requisite legal duty of care).

The analysis becomes a little more complicated when we consider CNAV funds with distributing and accumulating shares.

Distributing shares make full daily distributions of income, whereas accumulating shares retain income, which manifests as a gradual increase in the price of the shares and is realised by investors as capital gain upon redemption. Investors' preference for distributing or accumulating shares is essentially driven by taxation issues and specifically in differences between the taxation of income and capital gains. Again, this is best illustrated by example. To keep the maths simple, assume in the previous example that portfolio produces a non-compounded annual yield of 3.65%, i.e. a daily yield of 0.01% or 1bps or USD100, and ignore the default at T3.

If all the shares were distributing shares, then investors would have received a distribution of USD100 per day between T0-T2. Distributions by distributing shares are typically priced to nine decimal places, so each share would have been attributed a daily distribution of USD0.00010000 ($100/1,000,000$). The price per share would have remained unchanged.

If all the shares were accumulating shares, then each share would have accumulated USD0.00010000 per day. But since we have assumed that shares are only priced to two decimal places, it would have taken 50 days for enough income to accumulate to move the share price (i.e. $50 \times \text{USD}0.00010000 = \text{USD}0.005$). That, in turn, would result in a relatively 'smooth' yield for distributing investors, and a relatively 'stepped' yield for accumulating investors. Since most CNAV MMFs have both distributing and accumulating shares, they seek to avoid such differences (not least because it creates arbitrage opportunities), and so price accumulating shares to a more than two decimal places.

For the purposes of our example, assume that accumulating shares are priced to nine decimal places. The share price between days T0-T2 would accumulate by USD0.00010000 per day, and to that extent would provide the same total return as a distributing share. However, please note that because the share price is now calculated to more than two decimal places, changes in mark-to-market values on T1 and T2 would also impact the price. Therefore: at T1 the share price (including mark-to-market movements and accumulated income) would be 1.000000000 ($999,900+100/1,000,000$); and at T2 the share price would be 1.00040000 ($1,000,200+200/1,000,000$).

But now a different problem arises: again, there is a difference between distributing and accumulating share, because whereas distributing shares are insensitive to mark-to-market movements less than 50bps, accumulating shares are fully sensitive.

To address this issue, CNAV MMFs use amortised cost to value their portfolio, i.e. assume constant pricing. This eliminates any price difference between distributing and accumulating shares, other than that associated with the accumulation of income. But the risk of amortised accounting is that fails to account for material mark-to-market movements. So, as well as publishing a priced based on amortised cost, CNAV MMFs also maintain a parallel record of the mark-to-market price of distributing shares. If that mark-to-market price increases/decreases by 50bps (i.e. the fund breaks the buck) then amortised cost is abandoned, and the fund defaults to mark-to-market pricing. That parallel record of the

share price is sometimes referred to as the 'shadow price', and in this paper as the 'mark-to-market price'. The most accurate way of referring to it would be as the 'unrounded price', i.e. the unrounded price of a distributing share.

Some commentators object in principle to CNAV MMFs on the grounds that investors purchase shares for USD1.00, even though the net asset value per share may be more or less than USD1.00. But those differences are very small – literally smaller than the minimum unit of legal tender. It may be no more material than the differences arising to investors in equity and bond funds which publish a single price calculated at the mid between bid and offer.