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Fund Management and Systemic Risk - Lessons from the Global Financial Crisis

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Abstract

Fund managers play an important role in increasing efficiency and stability in financial markets. But research also indicates that fund management in certain circumstances may contribute to the buildup of systemic risk and severity of financial crises. The global financial crisis provided a number of new experiences on the contribution of fund managers to systemic risk. In this article, we focus on these lessons from the crisis. We distinguish between three sources of systemic risk in the financial system that may arise from fund management: insufficient credit risk transfer to fund managers; runs on funds that cause sudden reductions in funding to banks and other financial entities; and contagion through business ties between fund managers and their sponsors. Our discussion relates to the current intense debate on the role the so-called shadow banking system played in the global financial crisis. Several regulatory initiatives have been launched or suggested to reduce the systemic risk arising from non-bank financial entities, and we briefly discuss the likely impact of these on the sources of systemic risk outlined in the article.

Key words: Systemic risk; shadow banking; fund management; credit risk transfer; liquidity risk; financial crisis

JEL codes: G12; G23; G28; G01

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1 Fund Management and Systemic Risk - Lessons from the Global Financial Crisis

That financial crises typically have wide-ranging effects is a well-established fact. The global financial crisis (GFC) is certainly no exception. It even had an impact on the way the financial system is conceptualized. The understanding of how markets, financial actors and instrument function, interact and relate to each other has evolved considerably since the first signs of financial stress appeared in spring 2007.

This article relies on the experiences from the GFC to discuss new insights on how fund management can contribute to systemic risk.[1] Fund managers (FMs) are understood as a form of institutional investor whose principal purpose is to attain high risk-adjusted returns for their clients. In this article, we seek to distinguish between traditional fund managers (TFMs) and hedge funds (HFs) whenever such a distinction is meaningful and possible. Institutional investors – including FMs- have a number of well-known efficiency and stability enhancing features that decrease overall systemic risk.[2] However, it is also widely recognized that institutional investors can contribute to systemic risk by making asset prices stray away from fundamentals, and fuelling financial bubbles and procyclicality through herding behavior (c.f. surveys by Bikhchandani and Sharma 2000; Borio et al. 2001).

Yet, the experiences of the GFC showed that FMs may contribute to systemic risk in other ways than merely fuelling financial bubbles.[3] In this article, we use recent research coupled with empirical and anecdotal evidence to describe a number of ways in which FM can contribute to systemic risk. We distinguish between three ways that was largely overlooked prior to the crisis: credit risk transfer to FMs; runs on FMs and financial markets; and business ties between FMs and sponsors. Our insights are also compared and contrasted with the existing literature on FM and financial stability.[4]

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[1] In this article, systemic risk is defined as the risk of failure of one or several systemically important financial institutions.

[2] Among other things, institutional investors provide opportunities to diversify, hedge and insure risk; and they provide liquidity to and facilitate efficient functioning of markets (Davis and Steil 2001). They also reduce the (relative) weight of and thus systemic importance of banks in credit intermediation (Davis 2000). Unlike banks, they do not tend to take on excessive risk due to mispriced safety nets (Schich 2008).

[3] Other asset managers than FMs may also, and have in different shapes and degrees, contributed to systemic risk through the channels covered in this article. This topic is however beyond the scope of this article, and is to some extent covered elsewhere (c.f. Mezzacapo 2009 for sovereign wealth funds).

[4] While the distinction of the three ways FM contribute to systemic risk is useful for analytical purposes, in reality manifestation of systemic risk from FM is likely to be an outcome of an interaction between several sources (both those covered in this article, and other sources identified in the body of research on FM and systemic risk). Also, we omit potential systemic risk stemming from banks' investments in fund shares.

The topic of how FM may contribute to systemic risk is highly relevant in light of the ongoing regulatory reform that the fund management industry is facing. Financial Stability Board (FSB) has launched a substantial programme to consider ways in which systemic risk from shadow banking –which many consider some forms of FM a part of – can and should be mitigated through regulatory reform (FSB 2011). Also, considerable reform on money market funds (MMFs) is already underway in the US (c.f. McCabe 2012).

The remained of this article is outlined as follows: In sections 2-4, we discuss the three new insights on ways in which FMs contribute to systemic risk. In Section 5, we conclude by reflecting on the findings in light of the general financial stability literature. We also briefly discuss how regulatory reform to date and regulatory initiatives being considered may impact on the three identified ways in which FMs may contribute to systemic risk.

2 Credit risk transfer to FMs

The availability of other channels of credit intermediation than banks (such as fund managers) may enhance stability of a financial system and reduce systemic risk. But during the GFC, it also became clear that credit risk transfer (CRT) from originating banks to fund managers (and other market participants) can contribute to systemic risk. A brief overview of the main CRT instruments and markets, as well as the role played by FMs is provided below. Thereafter, we review research and anecdotal evidence on situations where credit risk transfer to FM has contributed and could contribute to systemic risk.

Credit risk transfer to FMs - Background

CRT can be separated into direct transfer of the underlying asset that bears credit risk (“funded instruments”), or synthetic transfer of credit risk using credit derivatives (“unfunded instruments”). The former category includes situations where an originating bank sells credit risk through transfer of traded loans (asset-backed securities or ABS:s), credit-linked notes, collateralized debt obligations etc. In the latter category, credit-linked securities (credit default swaps (CDSs)) are used to strip out and isolate the credit risk on the underlying asset and transfer it to another party. The party that buys protection from credit risk pays a premium to the protection seller, and receives protection if the underlying reference entity defaults (Andersen 2002).

CRT derivatives come in various shapes and form, and are often very technical constructions. In order to simplicify, one often distinguishes between bespoke over-the-counter (OTC) and more standardized products. The tradability of the standardized products has meant that markets for CRT have developed exponentially since the mid 90s (Kiff et al. 2003; Chan-Lau and Ong 2006). A decade later, by mid 00s, the gross market value of CDSs amounted to USD 294 billion (BIS 2006).[5] Although this a small proportion of total credit risk in the global financial system (cf. BCBS 2004), the amounts are nevertheless significant.

In fact, the rapid growth in CRT markets is related to the huge expansion of FM in general and the HF segment in particular (CGFS 2008). FMs enter into both sides of transactions on CRT instruments, and invest in a variety of OTC and standardized instruments (both funded instruments and those providing synthetic risk transfer). Their business models have evolved in various ways to take advantage of the opportunities provided by CRT, including hedging, arbitrage trading or developing tailor-made investment products together with insurance companies and investment banks. In this sense, in the area of CRT, FMs have become both clients *and* competitors to the banks' credit intermediation business (CGFS 2008).

Whereas FMs played a minor role in CRT in its early stages, they have replaced insurance companies as the most visible and active non-bank participants in CRT in the last decade (Lescreawaet 2006; CGFS 2008). HFs held a market share of all synthetic protection sold corresponding to 2 percentage points in 1999 (Andresen 2002). By end 2007, HFs' market share had grown to 28 percent (Duffie 2008). According to CGFS, HFs represented approximately half of US trading volume in structured credit markets in 2008 (CGFS 2008). Statistics on CRT demonstrates that, besides primary dealers and central clearing parties, HFs is the most important category of financial institution in offering credit protection on a net basis (see Table 1 below).

<Table 1 Net credit protection bought by sector (notional amounts, USD bn June 2012)>

TFMs adopted CRT at a more moderate pace and at a later stage. Nonetheless, in recent years TFMs have become more active in their role as protection seller (Chan-Lau and Ong, 2006). There are mainly two types of TFMs that rely sell protection as part of their investment strategies and adjust their credit exposures: Enhanced/dynamic money funds that seek to achieve above money market rates by investing in (among others) CRT while simultaneously providing daily or near daily liquidity; and specialized credit funds that seek long credit exposure through CRT (CGFS 2008).

Non-bank entities that engage in the management of the various risk associated with providing credit, can improve the stability of the financial system by spreading risk, contribute to better allocation and pricing of credit risk, and by

[5] The real size of CRT is in any case smaller than the notional amounts provided above, which may give a misleading picture of the amount of risk actually transferred.

offering opportunities for banks or other systemic firms to reduce credit risk exposure and leverage (Duffie 2007; Kiff et al. 2003).[6] Moreover, alternative credit intermediation channels may prove a vital substitute for borrowers in times when trouble in the banking system restricts the banks' lending capacity (IMF 2002).

In fact, prior to the CFG, most regulatory and supervisory authorities highlighted the benefits of CRT in reducing systemic risk (e.g. FSA 2002; IMF 2002; OECD 2002; IAIS 2003; BCBS 2004). The fact that none of the shocks the global financial system experienced in 2001-2002 had severe repercussions on financial stability was in part attributed to CRT by many observers (IMF 2002; BIS 2002; Persaud 2002).[7]

Credit risk transfer to FMs - Lessons from the GFC

While FMs have contributed to the depth and scope of the CRT markets, including market liquidity and price efficiency (CGFS 2008), their involvement of FM in these markets has nevertheless been shown to pose at a threat to financial stability. If FMs run into trouble, this may contaminate the banking sector and lead to an interruption in credit provisioning with potentially systemic consequences.

Firstly, CRT has led to the creation of new types of relationships between financial actors (credit protection buyers and sellers), which has strengthened the links between various sub-sectors of the financial system (Kiff et al. 2003; Andersen 2002). As part of this, the transfer of credit risk from originator to FM has increased interconnectedness between banks and FMs. Interconnectedness is a well-documented channel of potential contagion that may disrupt the functions of the financial system (cf. BCBS 2010). It is typically more accentuated in cases where the links between actors are less visible, which is particularly the case for relationships created between originators and actors that are subject to relatively little regulatory and supervisory scrutiny. The reason is that it makes tracking of true credit and counterparty risk more challenging (Andersen 2002; IMF 2002; CGFS 2003). This problem is arguably particularly severe in the case of CRT to HFs, since they are less transparent and more complex than most other financial firms (Lescreawaet 2006; Kambhu et al. 2007) and have overtaken insurance companies as the dominant credit protection

[6] Distributing risk among a wider range of financial actors, particularly outside the banking system, may reduce systemic risk in various ways (cf. Duffie 2007; Wagner 2006; Kiff et al. 2003). For instance, it may allow banks to replace single large exposures with a more diversified credit portfolio (replicating a syndicated loan). Transferring credit risk from banks to other entities that are less pivotal to liquidity provisioning may also reduce systemic (liquidity) risk. By improving pricing and allocation of risk, CRT may also be welfare-enhancing (cf. Duffie and Rahi 1995; Allen and Gale 1994).

[7] These shocks include the first synchronized slowdown of the globalization era, the September 11 attacks, and the bursting of the Dotcom-bubble.

sellers (Vause 2010). This, in turn, also makes the distribution of risk in the financial sector as a whole harder to observe from a macro-prudential perspective.

Secondly, the transfer of credit risk from banks to FMs may in reality be insufficient. This means that risks can remain in systemic institutions (particularly in the banking sector), but may elude supervisory oversight and lead systemic institutions to have insufficient ability to absorb losses from the manifestation of such risk (cf. Merrit et al. 2001; Tolk 2001; Kessler and Levenstein 2001; O´Kane and McAdie 2001).

The nature of such insufficient risk transfer differs depending on whether the risk transfer is funded or unfunded. Funded risk transfers may still expose the originating bank to credit risk, in case it has committed liquidity lines for the various funding vehicles typically used in such transactions (SPVs, SIVs etc). In addition, implicit guarantees to absorb credit and/or liquidity risk to preserve reputation or franchise values also expose the originating bank to risk (IMF 2002; BIS 2002b). In the GFC, such implicit guarantees made a large number of banks in Europe and the US suffer huge losses and had a severe impact on their capital ratios and liquidity positions (see further Section 4).

For unfunded risk transfers, the incompleteness relates to the process of settlement following the trigger event. In that process, protection seller might delay payment, refuse to pay, or litigate the claim that a credit event has occurred. Although market participants have developed an orderly process for fulfilling credit derivatives contracts (Cole et al. 2007), the process remains largely untested and it still characterized by uncertainty (as demonstrated by the Greece case (cf. Buttonwood 2012)). In these cases, a proportion of risk nevertheless remains with the originating banks. In fact, as anecdotal evidence of the importance of such risk, credit rating agencies issue ratings of insurance companies' willingness to compensate their credit protection buyers when a credit event seemingly has occurred (Kiff et al. 2003).[8]

Insufficient risk transfer also occurs in the sense that while the originating bank's credit risk may have decreased, it may under certain circumstances merely have been transformed into counterparty credit exposure that bears credit risk (Cole et al. 2007). In case losses occurred on credit derivatives causes a counterpart failure, the bank will nevertheless suffer a loss from that counterpart exposure.[9]

Systemic risk and credit risk transfer to FMs

[8] For a detailed discussion on credit risk manifestation in actual HF failures, see for instance Chany et al. 2005.

9 The case of AIG (albeit not a fund manager but an insurer) illustrate the counterparty credit risk associated with CRT. A number of generic problems associated with adverse selection and moral hazard in CRT transactions are discussed in CGFS (2003).

The lessons from the GFC show that while CRT may increase resilience of the financial system, CRT may still act as a potential source of systemic risk. Though prior shocks to the global financial system did not cause much turbulence in CRT markets, the uncertainties surrounding the developments in Greece and the various implicit guarantees that had to be fulfilled by sponsoring banks point to a potential source of concern. Also, in light of the fact that FMs is the most important non-bank participants in CRT, interconnectedness between fund management and other (potentially systemic) sectors of the financial system has increased.

The above mentioned types of systemic risk – interconnectedness and insufficient risk transfer - may also reinforce other forms of systemic risk that may emanate from FMs, in case they cause second round effects through the market channel (see Section 3) or through business ties (see Section 4).

3 Runs on FMs and financial markets

The GFC also showed that the risk of a run on a fund had been seriously underestimated by practitioners, regulators and academics. The manifestation of such liquidity risk ended up threatening the stability in the funding of banks and shut down important credit and money markets (which fed into bank funding difficulties through its impact on repos and other securities finance transactions). Runs on funds and runs on markets by fund managers is the second source of systemic risk from FMs covered in this article. Prior research and evidence on this topic is summarized in this section.

Runs on FMs and financial markets - Background

Fund managers are important providers of funding to financial institutions, businesses and governments (FSB 2011). According to recent estimates, European TFMs hold 25% in total *securities other than shares* issued by Eurozone entities (Delbecque 2012). Subcategories of fund managers can be particularly important to certain market segments; for instance, US MMFs held almost 40% of the outstanding volume of commercial papers (CPs) by mid-2008 (Baba et al. 2009). Table 2 below outlines estimates on the amounts held by MMFs in a selection of important money and fixed income markets in the Euro area:

<Table 2 Fixed income and money instruments issued by various sectors held by Euro area MMFs (percentage of outstanding volumes end 2011)>

As frequent buyers and sellers of financial securities, they contribute to the pricing and liquidity of a multitude of financial markets. In addition, unlike banks, funds have been thought to be immune to runs. Banks' time horizons for lending and borrowing are mismatched. In combination with convertibility of deposits into fixed amounts of cash, this makes banks prone to runs (Diamond and Dybvig 1983). Funds, on the other hand, do not promise fund investors their money back.[10] In return, investors benefit from a higher expected return. Furthermore, information asymmetries are lower, as funds are more transparent and the value of their assets is usually more observable compared to the value of the assets of a bank (Scott 1998). Another explanation why fund are not prone to runs, is that fund investors know they would bear the costs of triggering a descending price spiral on the funds' assets. Therefore, fund investors are more likely refrain from making additional investments rather than redeeming fund units (Klapper et al. 2004). Taken together, this means that fund have been able to provide stable funding to other financial intermediaries. In that sense, funds have been seen as important safeguards of financial stability

Empirical evidence from before the GFC seems to corroborate these theoretical explanations. Miles (2001) concluded that investors perceive MMFs to be safer than ordinary banks. Gorton and Pennacchi (1993) found that investors do not run from MMFs even as defaults on CPs increase. In fact, some evidence suggests that inflows into certain types of funds (primarily short-term credit funds including MMFs) increase during times of financial turbulence and market-wide liquidity shocks (Miles 2001; Pennacchi 2006). This evidential fact was also strengthened during certain periods of the GFC, as conservatively managed MMFs gained substantial inflows when the financial turbulence arose. In the US, the total assets under management (AuM) by MMFs increased by 20% in 2008 (Baba et al. 2009).

Taken together, FMs contribution to market functioning in combination with an absence of runs has been taken as evidence of their contribution to financial stability. Whereas a bank run may lead to a contraction in credit supply with macroeconomic consequences (Bernanke 1983), funds´ have been able to provide stable funding to other financial intermediaries. For those reasons, market participants, scholars, central bankers and other policymakers have all recognized that fund management contribute significantly and positively to financial stability (Kohn 2008).

Runs on FMs and financial markets – Lessons from the GFC

Exceptions to this view were rare. However, Edwards (1995) and Stigum and Crescenzi (2007) conclude that that if a fund who offers a fixed par value (i.e. constant net asset value or CNAV) that it cannot uphold, a run is plausible. Also,

[10] Investors may however perceive that the fund manager guarantees that returns will be at least not negative for certain hedge or constant net asset value (CNAV) funds.

Lyon (1984) and Shleifer and Vishny (1997) remark that investors have incentives to run on a fund, if its assets are subject to uncertain valuation (due to accounting uncertainty, liquidity premium etc). Davies (2003) argues that it cannot be ruled out that non-banks may need direct public sector rescues in the future. During the GFC, all their apprehensions manifested. Funds became subject to runs, which in turn contributed to runs on various credit and money markets.

Runs on TFMs

The events that unfolded primarily concerned MMFs. The oldest CNAV MMF in the US, the *Primary Fund*, had up to the GFC gained market share by investing in higher-yielding paper, including Lehman Brothers notes (Stecklow and Gullapalli 2008). In mid-September 2008, the fund manager announced that the shares in the fund were worth a mere 97 cents, and a run on the fund was triggered (Mishkin 2010). Within four days, investors had redeemed 97% of the fund shares (Baba et al. 2009).

The debacle of the Primary Fund set off broad shareholder redemptions, similar to a broad-ranging bank run (Fender et al. 2008). This not only affected other funds of the fund manager in question, but spread to US MMFs more generally, even though no other fund had “broken the buck”.[11] Studying these events, Schmidt et al. (2011) found that flows across funds with similar risk characteristics became strongly correlated during this period. Other prime CNAV fund suffered redemptions, while sovereign funds received inflows, as fund investors fled to safety (Baba et al. 2009). Institutional fund investors accounted for the initial and large redemptions, while retail investors followed at a slower pace (Baba et al. 2009; Schmidt et al. 2011; Witmer 2012). Contagion across FMs was a fact.

However, while CNAV funds suffered the largest runs (Witmer 2012), other MMFs were also affected (Gordon and Gandia 2012). In Europe, the enhanced MMF segment suffered a similar fate.[12] Downgrades and initiated reviews on a number of distressed subprime transactions by major rating agencies (S&P, Moody’s, Fitch and Dominion) triggered a broad-based run on European MMFs. Certain funds, being heavily exposed to subprime assets, lost vast amounts of

[11] Although reporting an unbroken buck, Reserve’s $10 billion US Government Fund received sell orders corresponding to 60% of its AuM (Baba et al. 2009).

[12] Enhanced (or alternatively *dynamic, absolute performance* or *absolute return*) MMFs seek to bridge the gap between traditional MMFs and bond funds, by pursuing higher returns – for instance 30 basis points above inter-bank borrowing rates – by taking on additional risk. This is achieved by investing in longer-dated and more volatile instruments such as short-term bonds, currencies and arbitrage on credit instruments (Standard & Poor’s 2007). While some are conservatively managed, others may include varying levels of exposure to collateralized debt obligations (CDOs) and commercial papers (CPs) offered out of structured investment vehicles (such as asset backed commercial papers (ABCPs)) (Fitch Ratings 2006).

their AuM within days. But MMF investors had little possibility to distinguish between funds that were exposed to these transactions and those that were not (Bengtsson 2012). On aggregate, the fund segment lost around 21% of total AuM in the third quarter of 2007 (Kragenbring 2007). Several fund managers imposed haircuts on CNAV fund shares, closed funds to redemptions or even liquidated funds (Bengtsson 2012). Also, support from sponsoring banks was also extended to a number of funds in the US and the EU (see further Section 4).

Runs on HFs

Hedge funds have a longer history of runs, primarily due to their leveraged structure and funding by securities financing (c.f. Kambhu et al. 2007). *LTCM* and *Amaranth Advisors* are two examples of funding illiquidity through a run on funds' repo and other types of short term financing. Even though both these funds had a reported (albeit questionable) positive equity, they were unable to meet margin calls on their short term funding (Kinga and Maier 2009).

During the GFC, this type of HF runs reoccurred. In summer of 2007, HFs managed by Lehman Brothers and Bear Stearns were having trouble meeting margin calls and lost funding (Brunnermeier 2009). The hedge funds' sponsors stepped in with liquidity support (see further Section 4), but eventually the funds were wound down as the losses on mortgage-backed securities the funding markets had anticipated finally materialized (Dwyer and Tkac 2009).

Runs on banks and markets

The runs on investment and hedge funds had a direct impact on financial stability. Firstly, the various support actions taken had a direct knock-on effect on the sponsoring banks' liquidity and capital positions. Secondly, redemptions forced up average maturities in the fund managers' portfolios, which combined with an anticipation of further redemptions led fund managers to increase investments in very short term cash-like instrument (Baba et al. 2009; Bengtsson 2012). In many banking systems in Europe and the US, the supply of short term funding dropped sharply (Baba et al. 2009; Mishkin 2010). In certain countries, the run on MMFs strongly contributed to the downfall of the banking system as its funding dried out (Gunnarsdottir and Strömqvist 2010). A similar pattern was observable in the summer of 2011, as US MMFs pulled out of European banks and putting pressure on the banks' dollar-denominated funding and trading (Duygan-Bump et al. 2012). [13]

[13] Shifts in composition and maturity of fund assets are also affected by – inter alia - credit market conditions, market liquidity and level of interest rates. In general, however, reductions in credit risk are usually accompanied by maturity extension to maintain sufficient yields (cf. Baba et al. 2009)

But the fund-runs also contributed to financial instability indirectly, through affecting the functioning of credit and money markets. In the end, fund runs contributed to a wide-ranging liquidity crunch. The potential for such “market-runs” resulting from runs on (an) individual fund(s) had been conceived by Edwards (1995) and Davies (2003). The underlying notion is that if many institutional investors simultaneously seek to shift asset allocations, market liquidity may collapse.[14] This in turn may hinder issuances and rolling over of debt for those banks, other financial intermediaries and firms that rely on these markets for their funding. While previous market breakdowns had only affected minor idiosyncratic markets (cf. Davies 1999), during the GFC such market liquidity crunches affected major credit and money markets.

As described in FSB (2011), Baba (et al. 2009), Bengtsson (2012), Duygan-Bump (et al. 2012) and others, when fund managers and other intermediaries unwound their exposure to longer-term and more risky assets, prices started falling which triggered further sales. Eventually, the negative price-sales spiral caused a liquidity crunch on several fixed income and money markets. Though the herding of cash (driven by regulation or market requirements) may have been rational from the individual fund managers’ perspective, the consequences of the collective action of all fund managers, other intermediaries and market participants led to detrimental consequences for both CPs and certificate of deposits (CDs) markets (Baba et al. 2009). Repo markets were also affected, as non-agency mortgage-backed/ABS collateralized repos experienced a run, although agency and treasury repo markets were largely unaffected (FSB 2011; Krisnamurthy et al. 2011). Chernenko and Sunderam (2012) find empirical evidence that redemptions from investment funds did impair the functioning of money market. And while runs on TFMs doubtlessly contributed to a liquidity crunch during the GFC, there is also empirical evidence that show when HFs experience shocks to their funding liquidity, the market liquidity of the asset classes that they trade is reduced (Aragon and Strahan 2011).

Fears of another run on funds with accompanying market liquidity problems emerged in 2011, as the European sovereign crisis unfolded. Chernenko and Sunderam (2012) attribute a “quiet run” on US MMFs to their exposure to European banks. AuM of US prime MMFs fell by 10% in summer 2011, according to the US mutual fund industry association (Investment Company Institute (ICI).

Such redemption pressures, coupled with the fact that MMFs are significant investors in EU sovereigns, made the US Financial Stability Oversight Council (2011) and others raise concern that another liquidity crunch would occur (Duygan-Bump et al. 2012). It is also noteworthy that several MMFs shut to

[14] All asset reallocation are of course not driven only by fund investors and fund managers, but also from “rational” herding by all kinds of investors. Yet, fund managers are prominent actors in many credit and money market (see statistics in Table 2) and therefore have a significant influence on the functioning of markets.

subscriptions to prevent pre-emptive runs as ECB lowered interest rates in July 2012 (IOSCO 2012).

In retrospect, it is striking that Davis' (2003) prediction that funds would need public rescues in the future manifested during the GFC. In order to safeguard financial stability and curb systemic risk, US authorities launched liquidity facilities to aid an ailing fund sector in autumn 2008. Similarly, in a number of European jurisdictions, authorities offered guarantees or eased regulation to ease strains of their domestic fund industries (Bengtsson 2012).

Systemic risk and runs on FMs and financial markets

The notion that funds are run-proof and always contribute positively to the functioning of markets (c.f. Kohn 2008) has to be reconsidered in light of the experiences from the GFC. The run on MMFs confirms the hypotheses of Edwards (1995) and Stigum and Crescenzi (2007) that funds that cannot uphold a fixed par value will suffer runs. Also, the experiences from the HF segment confirm that if there is valuation uncertainty, investors will run (as predicted by Lyon (1984) and Shleifer and Vishny (1997)), despite the lower degree of information asymmetries compared to banks (c.f. Scott 1998). In hindsight, one may also question Miles's (2001) conclusion that investors perceive MMFs to be safer than ordinary banks.

Furthermore, the idea that investors refrain from running on a fund in fear of having to bear the costs of a descending price-spiral (c.f. Klapper et al. 2004) is challenged by the events of the GFC. Wide-spread runs on FMs had detrimental effects on market, with negative feed-back loops that fed further runs and ultimately severe funding difficulties for the banking system, as predicted by Edwards (1995) and Davies (1999; 2003).

4 Business ties between FMs and sponsors

A third channel by which FM can cause systemic risk is in cases where trouble of FM spill over on banks (or other systemic institutions) because they together form constituting parts of financial groups or conglomerates. In this article, we use the term *business risk* to cover the variety of risk manifestations that originate from business ties (credit, market, liquidity or operational) both on and off-balance sheet (cf. Dierick, 2004). In this section, we summarize prior research and evidence during and since the GFC on situations where banks have been contaminated by FM through the business risk channel.

Business ties between FMs and sponsors - Background

Close business ties between FMs and banks through the existence of financial groups is a common feature in the financial services industry. Since the late 90s, banks have diversified into non-interest earning activities such as asset management. This trend is global, but particularly pronounced in Europe (Guiso et al. 2002). Nowadays, banking groups are important providers of FM services, although these services are typically offered through separately capitalized asset management subsidiaries (Rajan 2009; Bengtsson and Delbecque 2011).

HFs are also related to banks by ownership, often by either holding a controlling share of votes or a minority stake ownership. JP Morgan Asset Management and Goldman Sachs Asset Management are two examples of the former. Morgan Stanley's stakes in Lansdowne and Avenue Capital are examples of the latter (King and Maier 2009). However, this type of relation is probably less common for HFs than for TFMs. Nine out of the twenty largest US mutual fund complexes in 2003 were affiliated with other institutions. By contrast, most hedge funds are independently run companies that are not affiliated with any other institution (Kahan and Rock 2007). However, data presented in Martin and Pescatore (2007) suggest that many of the largest US HFs are affiliated with large prime brokers and banks. Likewise, Garbaravicius and Dierick (2005) noted that many prime brokers increasingly began setting up in-house hedge funds. While there seems to be no readily-available data on HF affiliation and TFM affiliation in the US, data from Lipper (2011) show that 12 out of the 15 largest TFMs in the EU are run by banks (see Table 3 below). This pattern of significant bank ownership of fund management companies is also corroborated by Bengtsson and Delbecque (2011).

<Table 3 15 largest fund management companies by AuM and parent group in the EU (EUR bn end 2009)>

Business ties between fund managers and other categories of financial services companies are often seen as strengthening the resilience of the associated companies to various types of risk. Thereby, business ties contribute to their financial soundness (Schilder and van Lelyveld 2002).[15] There are two main reasons: *diversification* of various types of risk (liquidity, interest rate and currency risk); and *cost and revenue synergies* in – among others- risk management, distribution, marketing and administration.[16] As resilience and soundness of the financial services companies improve, business ties between various types of financial firms contribute to financial stability and reduce systemic risk.

[15] There are no empirical studies on the implications of offering asset management and banking services within a conglomerate. Empirical evidence on the implications on profitability and value of conglomeration in financial services paints a mixed picture. For more discussion, see Elsas et al. (2010) or Van Lelyveld and Knot (2009).

[16] For a more detailed discussion on the benefits of asset management offered in conjunction with other financial services, see Bengtsson and Delbecque (2011).

Business ties between FMs and sponsors – Lessons from the GFC

However, whereas business ties between FMs and other financial companies may increase the resilience of the group, they may also serve as channels of contagion. Such contagion channels may transfer troubles experienced in the FM company to other companies in the financial group. They may relate to profitability and liquidity or capital support. In cases where companies within the same group as the FM are systemic to the financial system or overall economy, business ties may pose a threat to financial stability.[17]

Research on how such business risk from FMs may threaten the financial health of the sponsoring company or the financial group is rare (one exception is Christoffersen 2001). However, from a conceptual perspective, contagion through the business risk channel can be both direct and indirect. Direct channels of contagion include when the FM company makes losses, which in case of prudential consolidation reduces capital of the entire group. In case of non-consolidation, reduced profitability typically lowers dividends to the parent company and the shareholder value of the FM company. Indirect channels of contagion work through non-contractual obligations in the shape of contingent liabilities and commitments. In theory, such indirect channels should be limited in fund management. According to the contract, any losses suffered by a fund should be borne by the fund investors.

However, in the GFC, evidence of both indirect and direct contagion appeared. Firstly, parent companies in financial groups issued implicit guarantees to absorb various risks of fund investors (Bengtsson 2012; Kacperczyk and Schnabl 2011; Wiethuechter 2010; Kinga and Maier 2009). This means that risk carried by fund investors was transferred back onto the parent bank's balance sheet. According to Brady et al. (2012), at least 21 CNAV MMFs would have been unable to maintain a stable NAV without sponsor support during the GFC. Secondly, direct support was provided in three distinct forms (although sponsoring companies relied on various combinations of support forms in practice):

1. Foregoing fees

   Fund managers did forego fees in order to enhance the return to the fund investors. In cases where the fund manager is owned by another financial firm, such foregoing of fees damages the capital position not only of the fund management company, but also the parent company and the group as a whole. Bengtsson (2012) documents several cases of MMF managers waiving fees during the initial stages of the GFC. For 2011, Greene (2012) reports that money funds on aggregate waived around

[17] Indeed, the issue whether whether diversification benefits also apply in times of stress has been discussed (c.f. Santomero and Eckles 2000). Also, efficiencies from conglomeration may turn into inefficiencies under certain conditions (c.f. Schilder and Lelyveld 2002).

$2.3bn in fees, while collecting $4.7bn. More recently, in the European sovereign debt crisis, rating agencies expected fee reductions to maintain positive returns (Funds Europe 2012).[18]

2. Liquidity support

Sponsoring companies provided liquidity support to funds managed by other companies in the same financial group, when those funds suffered net redemptions or margin calls. Liquidity support was rather common during the GFC. In its initial stages, several HFs were supported by their parent companies. Examples include Goldman Sachs and BearSterns in early 2007 (Kinga and Maier 2009). Despite not having any contractual obligations, the latter lent US$ 3.2 billion to a single HF as the market realized that the fund had trouble meeting margin calls (Brunnermeier 2009). Also, several MMFs domiciled in Luxembourg took out short-term loans from their parent banks to meet redemptions (CSSF 2008; OECD 2010).

As long as the parent company does not suffer from liquidity shortages or troubles refinancing its operations, such liquidity support is unproblematic. However, experiences from the GFC showed that parent banks themselves suffered liquidity shortages as a consequence of them providing support (Brunnermeier 2009).

3. Capital support

During the GFC sponsors took on losses from the fund by purchasing assets below market value, or guaranteeing the value of the fund's assets. The fact that only one single US MMF failed to maintain its CNAV during the last decade, is primarily due to sponsors supporting the value of funds' assets (Baba et al. 2009; FSB 2011). Although Moody's (2010) shows that between 1980 and 2009, over 200 funds benefitted from sponsor support in Europe and in the United States, the frequency of support peaked sharply in 2007-2009. According to Moody's (ibid), in Europe a total of 26 investment funds received parent support between August 2007 and December 31 2009. Evidence reviewed by Bengtsson (2012) indicates that the bulk of this support occurred in the turbulent post-Lehman autumn of 2008. Support was predominantly provided through asset purchases. For instance, AXA, Société Générale and Credit Suisse all took bought assets from funds managed by their asset management subsidiaries (Schultes and Wilson 2007; Crouchy and Turnbull 2008; Standard & Poor's 2008; Cobley 2008). But guaranteeing the value of fund asset also

[18] Christoffersen (2001) has shown that foregoing fees was common among low-performing funds generally, and particularly among high-performing retail oriented funds during the 80s and 90s.

occurred (Standard & Poor's 2008; Bengtsson 2012).

Similar observations were made in the US. Up to the outburst of the GFC, around 145 of US MMF benefitted from capital support from their sponsors (Crane Data Archives 2008). During the GFC, the frequency increased dramatically. Around a third of the top 100 US MMFs and 20 percent of all US MMF received financial support from management companies (Crane Data Archives 2008; FSB 2011). While it is difficult to calculate the value or potential impact on the sponsor from giving support, it is clear that the potential magnitude is considerable. According to estimates by Bank of England (2012), the AuM of sponsored MMF ranged between USD 15-80 bn for European banks, and USD 50-375 bn for US banks. This corresponded to up to 170% and 1300% respectively of the EU and US banks' core tier 1 capital.

Recent research, based on experiences from the GFC, suggest that there are at least three reasons why parent companies of financial groups may support a FM company despite not being bound to do so by contract. The first concern reputation and/or a wish to preserve the franchise value of their firm (Kinga and Maier 2009). A second reason may stem from the parent company holding common or similar positions as the fund in questions, and would suffer losses if the assets of the fund were liquidated. Finally, the parent company may rely on funding from the fund, and may seek to prevent disruption to their funding channel (see further Section 3). In fact, research has shown that sponsoring companies provide support even to uphold market functioning in periods of market distress (Kacperczyk and Schnabl 2011). While these reasons may be distinguished in theory, in reality a decision to support a fund (manager) within a financial group is probably often based on several of the above reasons.

Systemic risk and business ties between FMs and sponsors

The GFC showed that the business ties between banks and FMs give rise to business risks. The numerous events where sponsors' capital and liquidity positions worsened due to support of FMs, clearly show that while business ties may resilience of associated companies to various types of risk (c.f. Schilder and van Lelyveld, 2002), it can also contribute to systemic risk. Thus, while business ties between fund managers and other categories of financial services companies are often seen as strengthening the associated companies (c.f. Schilder and van Lelyveld 2002), they may also give rise to systemic risk.

5 Discussion

Fund management and systemic risk

Despite the numerous benefits offered by FMs to fund investors, the functioning of financial markets and the overall economy, the GFC has pointed to a number of ways FMs can contribute to systemic risk. In this article, we have used recent research coupled with anecdotal evidence to distinguish and discuss three novel ways in which FMs contribute to systemic risk. The numerous cases of direct and indirect policy support to FMs corroborate this view.

While the presence of these systemic risks in the FM industry have previously been largely ignored by academics and policy makers alike, their basic underlying features are well-covered in the general literature and theory on financial stability.[19] The risk of runs on FMs correspond closely to the view of the financial system accumulating risk over time (credit and liquidity risk in the case of FMs), which through feedback mechanisms eventually lead to imbalances. These imbalances subsequently cause the financial system to embark on a negative cycle with falling asset prices and increasing risk aversion.[20] Likewise, both credit risk transfer to FMs and business ties between FMs and sponsors increase interconnectedness between entities and sectors of the financial system, which facilitate the transmission and spreading of difficulties through the financial system.[21] Finally, the role of FMs in CRT has similarities with the well-known systemic risk stemming from concentration of exposures.[22] As FMs sells a significant part of all credit protection, this implies that credit protection buyers (such as banks) have a common and potentially concentrated exposure of counterparty risk.

The well-known interrelatedness of these features of potential financial instability is also notable for systemic risk emanating from FMs. Kinga and Maier (2009) notes that contagion channels between banks and HF often are overlapping. This notion can be generalized to the three sources of systemic risk emanating from FMs discussed in this article. For example, as certain funds were put under credit watch by credit rating agencies due to uncertainty of availability of sponsor support, a run on these funds was triggered (IOSCO 2012). Another example is when deterioration in the value of sponsor support negatively impacted the counterparty risk of banks, insurance companies or other entities with CRT exposures to funds.

Outlook on fund management and systemic risk

In response to the newfound sources of systemic risk discussed in the previous sections, policymakers have not been idle. Much policy work is undertaken under the auspices of FSB's program on shadow banking (2012a). There are also other initiatives that have bearing on the systemic risk in FM, both completed and underway. For instance, in the area of CRT, there is a general

[19] This section is based on the discussion in Borio and Drehmann (2009).
[20] For a discussion, see for instance Minsky (1982) and Kindleberger (2000).
[21] See for instance Rochet and Tirole (1996), Allen and Gale (2000), Kroszner (2010) etc.
[22] See for instance Cifuentes et al. (2005), Allen and Gale (2004), Acharya et al. (2010).

regulatory drive towards exchange based trading and central clearing of credit derivatives by FSB (2012b). If successful, by centralized clearing, the counterparty risk exposures to FM through CRT should diminish. Several regulatory initiatives have also been launched to lower the risk of runs on funds. For instance, in the US, SEC (2009) enacted stricter requirements on credit quality, maturities and liquidity buffers in Rule 2a-7, which governs US MMFs. In the EU, CESR (the predecessor of ESMA) imposed a new way of classifying MMFs in order to clearer distinguish between less and more risky types of MMFs in 2010. New regulation has also been introduced to sever the magnitude of support between FMs and their sponsors. The Basel Committee has strengthened requirements on considering reputational risk and implicit support in banks' internal capital adequacy assessment process under Pillar 2; BCBS has also set out to develop policy recommendations on the appropriate scope of consolidation for sponsors to the FSB (FSB 2012a). Likewise, the issue of sponsor support is under scrutiny also in the EU, as indicated by the recent consultation document on investment funds (European Commission 2012). There are also initiatives to strengthen reporting requirements on FMs and the mandate of authorities to take measures to reduce the systemic risk they may give rise to (such as the EUs Directive on Alternative Investment Fund Managers (European Parliament and Council of the European Union 2011) or the so-called Dodd-Frank Act (United States Congress 2010).

Whether there regulatory efforts will succeed in reducing systemic risk from FMs in the future is an open question. Since much of these regulation mentioned above is yet to be implemented or in many cases even completed, it still too early to tell. However, it is worth noting that many of the events described in this article took place even after regulatory measures to prevent their occurrences were enacted.[23] Also, history tells us that business opportunities to provide financial services tend to be the greatest where the regulatory frictions are the least. For that reasons, the significant regulatory reform that is directed towards the banking sector (such as Basel III and the numerous efforts to curtail the too-big to fail problem) will strengthen the incentives for financial activities to occur in alternative sectors of the financial system. Indeed, shadow banking – of which certain parts of the FM industry often considered- has emerged and expanded in many cases, as a consequence of the ordinary banking sector becoming subject to stricter regulation.[24]
In the light of the above discussion, it is clear that policymakers are left with the daunting task of finding the right balance between restricting systemic risk emanating from particular sectors without increasing the risk of the financial system as a whole.

[23] For instance, there have been runs on FMs even after the changes to SEC's Rule 2a-7 and CESR's guidelines on fund classification.
[24] See for instance Olson (2012) for a discussion.

Abbreviations

ABS – Asset backed security; AuM – Assets under management; BBA – British Bankers' Association; BCBS – Basel Committee on Banking Supervision; BIS – Bank for International Settlement; CD – Certificate of Deposit; CDS – Credit Default Swap; CESR – Committee of European Securities Regulators; CGFS – Committee on the Global Financial System; CNAV – Constant Net Asset Value; CP – Commercial Paper; CRT – Credit Risk Transfer; ESMA – European Securities and Markets Authority; FM – Fund Manager; FSA – Financial Services Authority; GFC – Global Financial Crisis; HF- Hedge Fund; IAIS – International Association of Insurance Supervisors; MMF - Money Market Fund; OTC – Over the Counter; TFM – Traditional Fund Manager.

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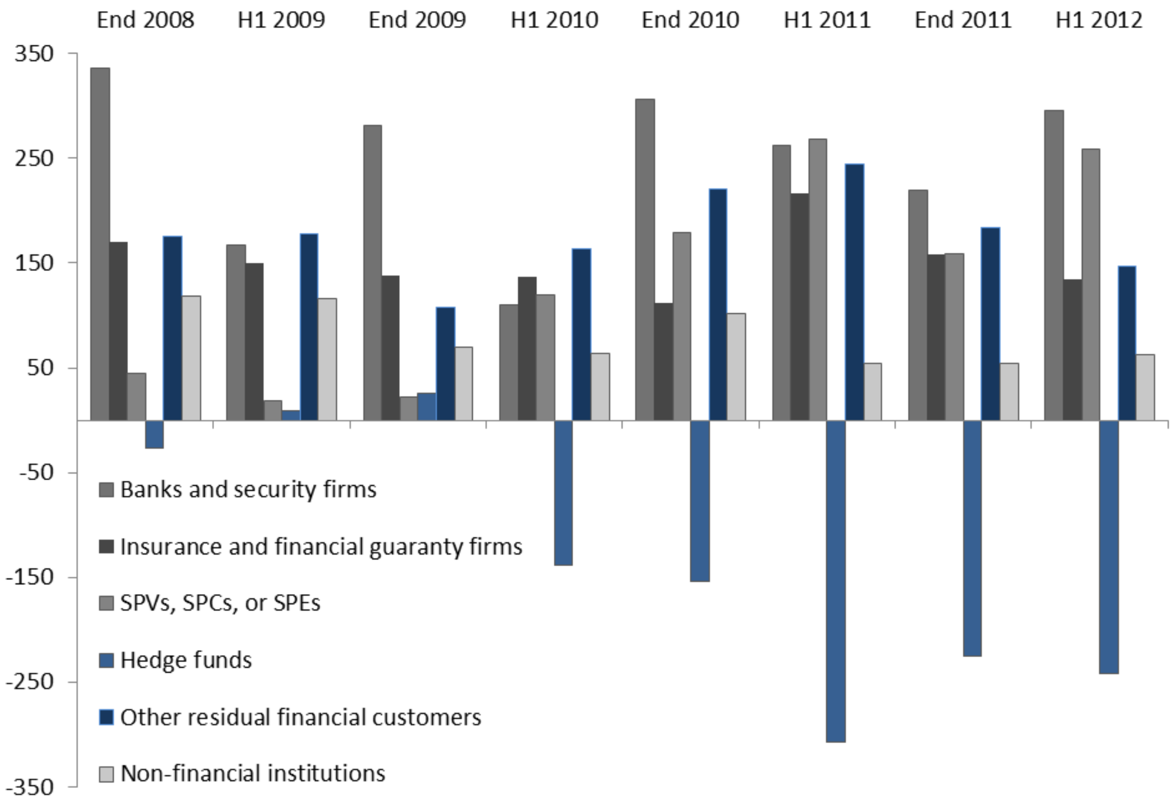
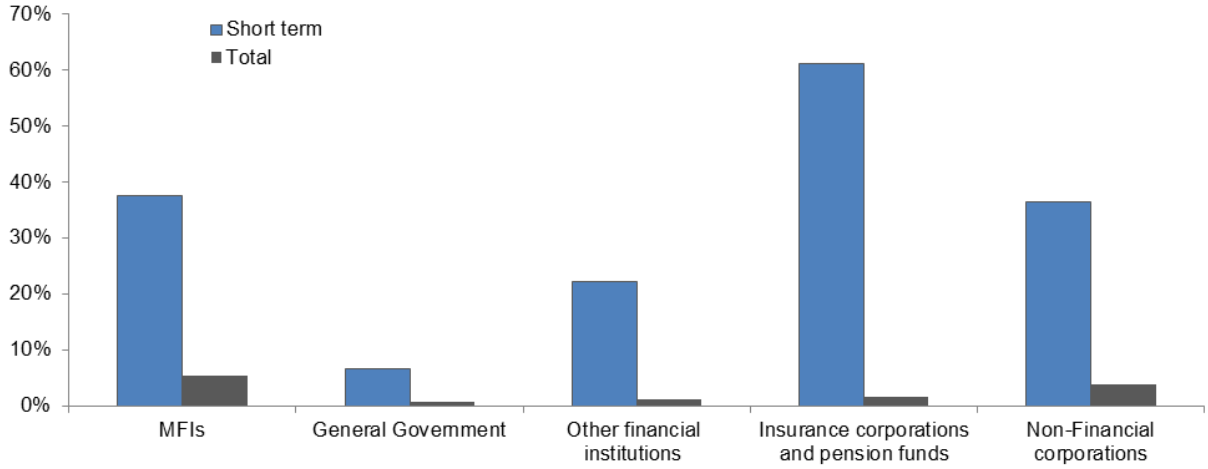
Table 1 Net credit protection bought by sector (notional amounts, USD bn June 2012)



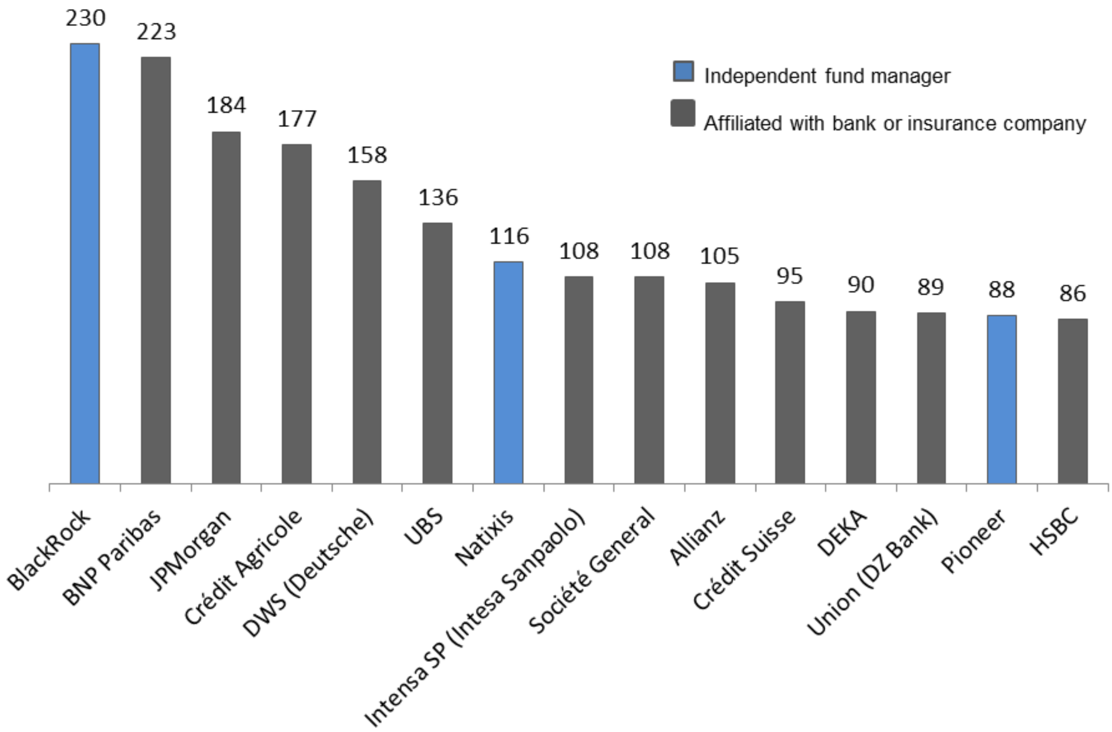
Source: BIS
Note: Positive (negative) figures indicate net credit protection bought (sold) by category. The data presented omits the categories *Reporting dealers* and *Central clearing parties*. While these categories together represent a large of the CDS market, their net exposures are typically very limited. *Insurance companies and financial guaranty companies* include pension funds, while other types on managed funds (excluding hedge funds) are well-represented in the category *Other residual financial customers* (c.f. Vause 2011).

Table 2 Fixed income and money instruments issued by various sectors held by Euro area MMFs (percentage of outstanding volumes end 2011)



Source: ECB, Balance Sheet Items (BSI). Securities Issue Statistics (SEC)
Note: Data cover all debt instruments and short-term (up to 1 year) debt securities issues in the euro area. Government bills are estimated.

Table 3 15 largest fund management companies by AuM and parent group in the EU (EUR bn end 2009)



Source: Lipper FMI/ThomsonReuters
Note: Data covers AuM of European investment funds (UCITS only).