## 2 DEVELOPMENTS IN LUXEMBOURG MONEY MARKET FUNDS

Par
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Luxembourg's investment funds industry is large, with assets valued at nearly 1.6 trillion euro at end-2008. Money market funds (MMFs) assets totaled 340 billion euro, or nearly 22 percent of the total investment funds' industry. Luxembourg MMFs total assets represent more than 9 times the country's annual GDP. The industry is the second largest in the world after the United States'. Clearly, the impact of MMFs' portfolio shifts on economic and financial activity is of systemic significance. Through their impact on monetary aggregates, MMFs operations matter for monetary policy in particular and financial stability in general.

At the euro area level, the January 2009 ECB Monthly Bulletin illustrated a portfolio shift toward an increased share of monetary assets in outstanding amounts for total financial assets. It happened because short-term deposits offered relatively attractive yields in a context of a flat yield curve. Therefore, as the financial and economic crisis deepened in 2008, with declines in confidence and increased uncertainty about future financial and economic developments, the interest in the potential systemic role of Luxembourg investment funds, and MMFs in particular, increased.

Foreign developments such as the collapse of Northern Rock in the United Kingdom and the sudden and rapid withdrawals of funds from United States MMFs also contributed to heighten interest in these financial intermediaries. In the United States, the unusual run on the MMFs, prompted the authorities to open a liquidity facility and put in place a guarantee for them.

In Luxembourg, some MMFs facing increased redemption pressures, used short-term credit lines and repurchase agreements to improve their liquidity position. Several promoters, in general banks, financed accrued redemption requests by subscribing new shares or buying out relatively illiquid assets of MMFs portfolio. These operations were not large, however. Only three MMFs had to suspend the redemption of their shares temporarily, a policy permitted by the current regulatory framework. In contrast to the United States, no guarantee was put in place in Luxembourg.

Importantly, in October 2008, changes to the BCL Act, made the Bank responsible for the surveillance of the general liquidity situation on markets as well as for evaluating financial market operators for this purpose. MMFs fall within the scope of the BCL's new task, and procedures to monitor their liquidity will be part and parcel of the BCL's toolkit.

This note performs two tasks. First, it explores developments in MMFs by documenting maturity changes in their portfolio composition, currency denomination, and geographic distribution.[7] The study finds that MMFs responded to market developments characterized by an extreme volatility of spreads, increased uncertainty, and falling returns, by shortening the maturity of their portfolio, and by shifting funds toward appreciating currencies and the corresponding geographic zones.

In addition, this note analyzes the links between MMFs and their custodian banks. While for the banking sector as a whole, the share of MMFs deposits in total non-bank deposits is relatively small, some banks, whose deposit base depends heavily on MMFs deposits, may experience liquidity pressures following a run on MMFs. Therefore, MMFs may have a systemic impact and have to be subject not only to micro but also to macroprudential supervision.[8]

6 Banque centrale du Luxembourg.

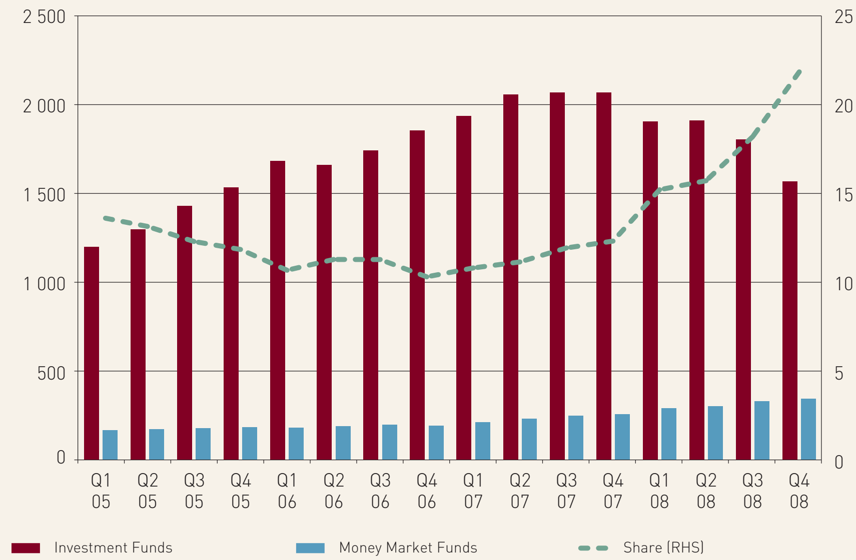
7 A new reporting from investment funds started to be generated in January 2009. It should make it possible to follow and analyze the evolution of liquidity in the market more closely in the future than has been possible for this study.

8 As shown in Box 4, 9 banks that do not open short positions with the parent group, out of a total of 32 banks (75 percent of total assets of the banking sector), are sensitive to a 20 percent deposit withdrawal from households, enterprises, and money market funds.

## 2.1 DEVELOPMENTS IN THE MMFS PORTFOLIOS

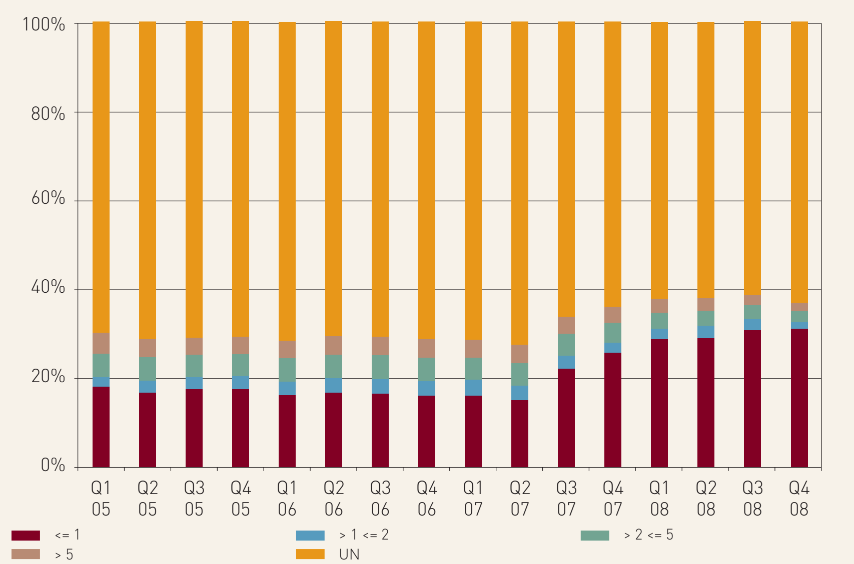
**In contrast to the investment fund industry at large, MMFs growth in 2008 decelerated only marginally and thus had a stabilizing role in the industry.**

Chart 1
Investment funds in Luxembourg (billion euros, and percent)




The growth deceleration of assets under management by the investment fund industry that started in 2007 continued during 2008 (*Chart 1*). However, while growth in the investment fund industry was somewhat above half its 2007 rate, it barely changed in the MMFs industry. This was largely the result of the market response to the crisis: a search for relatively less risky and more liquid investments. MMFs partly had a stabilizing role in the investment fund industry at large. The share of assets under management by the MMFs industry in total assets managed by investment funds actually grew three percentage points to reach nearly 22 percent at end-2008 (right-hand side axis).

Chart 2
Maturity of MMFs assets (shares)




**Starting in 2007/Q3, the asset maturity of MMFs portfolios decreased**[9]

The otherwise stable shares of asset maturity buckets started changing in 2007/Q3 with a shift toward a shortening of maturity (*Chart 2*)[10]. The share of assets with a maturity of less than one year doubled to reach 30 percent in 2008/Q4, from 15 percent in 2007/Q2. All other maturities shares fell. This reflected a search for safe and liquid assets and a search of yield against the background of a largely flat yield curve.

9 At this stage, the information collected on maturity refers to initial maturity.

10 Maturities are classified as: less than 1 year, between 1 and 2 years, between 2 and 5 years, and not specified.

### The portfolio composition changed accordingly

The share of bank deposits in total assets of the MMFs rose to 20 percent in 2007 / Q3 from 12 percent in 2007 / Q2 (*Chart 3*). It grew further to 31 percent at end-2008. These portfolio shifts were financed out of a reduction of short-term securities (excluding shares) that fell nearly 10 percentage points to 77 percent in the quarter. At end-2008, short-term securities had fallen to 2 / 3 of total assets. The trend observed in 2007 toward favoring investment in other financial institutions largely continued until mid 2008, but was reversed afterwards in a search for safety in an environment of growing uncertainty; it favored government securities. The share of securities held by other sectors more than halved between 2007 / Q2 and 2008 / Q4 to reach just 15 percent of the total.

In a dramatic change, the share of less-than-one year deposits in total deposits increased to about 59 percent in 2007 / Q3 from about 43 percent the previous quarter, and remained close to that level until end-2008 (*Chart 4*). This portfolio shift illustrates for MMFs the generalized search for liquid and safe assets.

While the share of short-term securities in total assets fell as MMFs sought the most liquid investments, the share of less-than-one year maturity in the total increased (*Chart 5*). In 2007 / Q4, their share was 5 percentage points higher than in 2007 / Q2 and, while it has dwindled somewhat since then, it has remained higher than before the start of the crisis in mid-2007. This development may have reflected a search for yield given the relatively flat yield curve.

Chart 3
Deposits and short-term securities by sector (share of total assets)

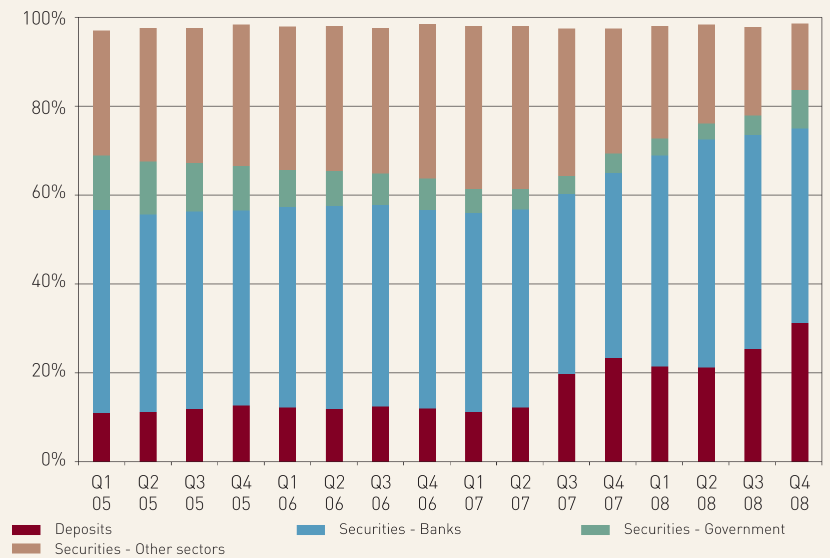



Chart 4
Maturity of deposits (shares)

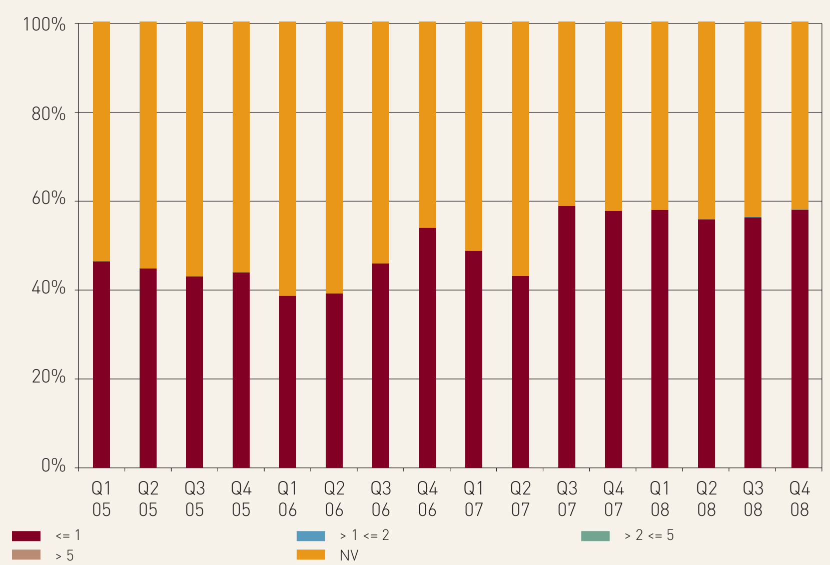
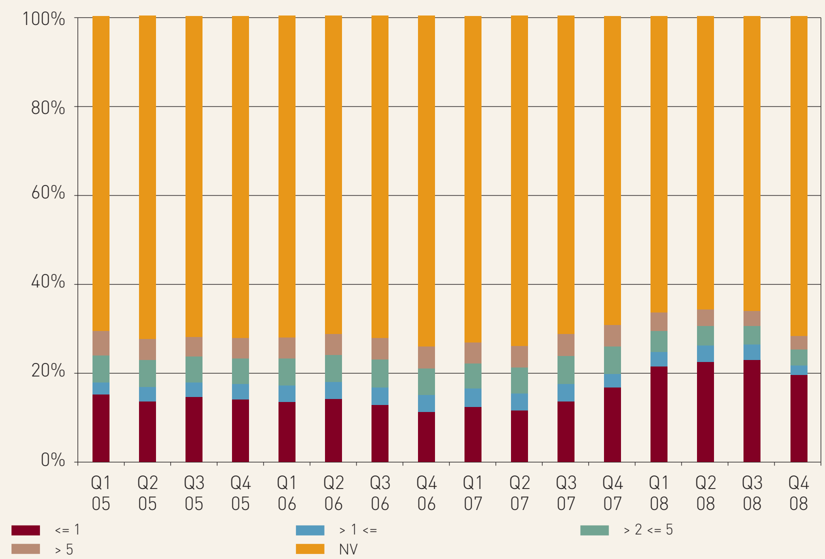


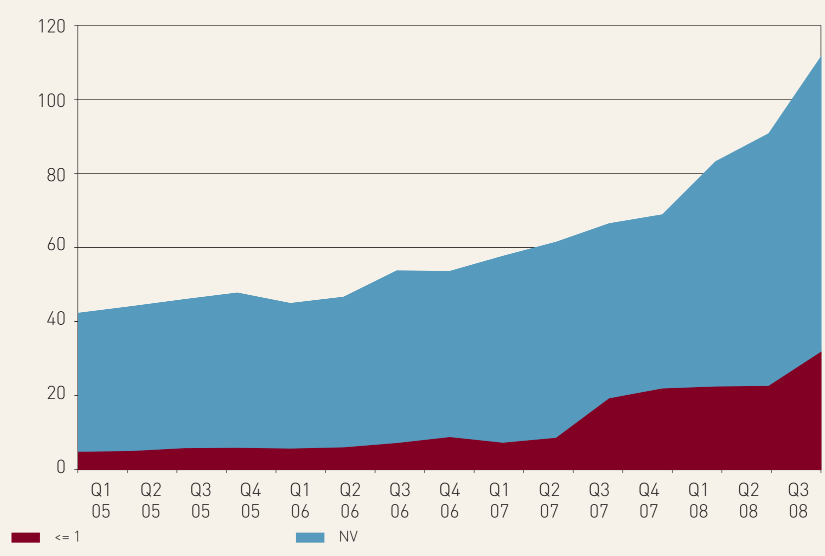
Chart 5
Maturity of short-term securities other than shares (share)




### Maturity shortening also affected US dollar- and UK pound-denominated investments

Investment in US dollars, Japanese yen, UK pound, and Swiss franc represented about 95 percent of the total MMFs' portfolio at 2008/Q3. US dollar-denominated investments represented about ¾ of the same total. Therefore, some exchange rate risk may be part of the MMFs portfolio characteristics to the extent that MMFs invest in currencies other than the one in which the parts were issued.[11]

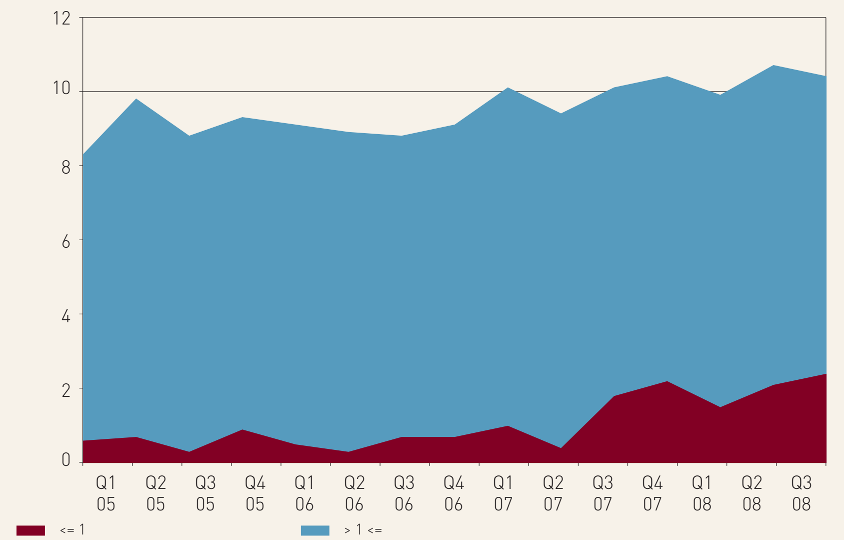
Chart 6
US dollar-denominated assets (billion euros)




Starting in 2007/Q2, there was a shortening of the maturity of US dollar- and UK pound-denominated assets (*Charts 6-7*). The search for more liquid investments was relatively much more pronounced in the US dollar portfolio. As a result, between 2007/Q2 and 2008/Q4, the share of less-than-1-year investments in the total doubled to 28 percent (not shown).

11 There is no data allowing a break down of the exchange rate risk of MMFs portfolio.

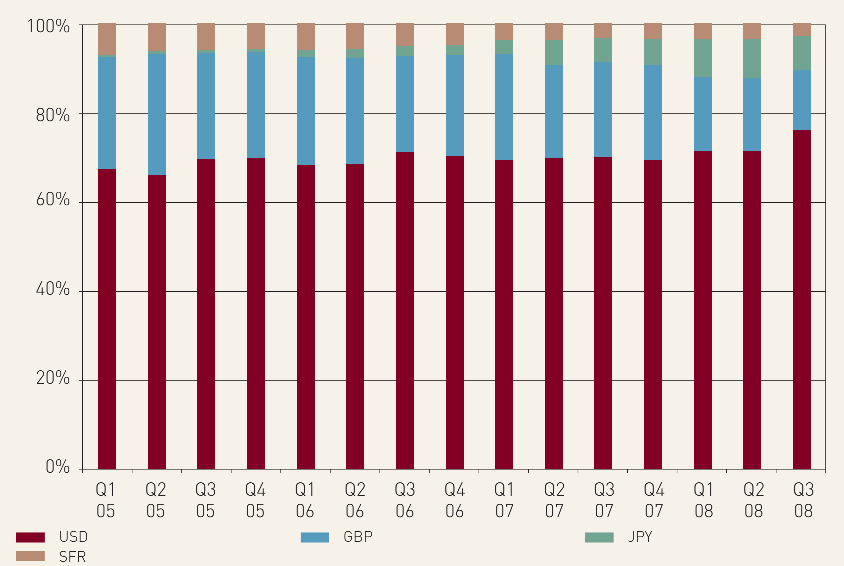
Chart 7
UK pound-denominated assets (billion euros)




### The volume of US dollar-denominated and yen-denominated investments also increased

Once exchange rate developments are taken into account, the portfolio composition after 2007 / Q2 changed toward more short-term US dollar- and yen-denominated assets, and away from the UK pound and the Swiss franc.[12] While it also happened, a shift away from euro-denominated assets was confined to the second half of 2007. However, due to significant exchange rate changes, deflating by bilateral nominal exchange rates makes the portfolio shifts somewhat clearer (*Chart 8*).

Chart 8
Currency composition of assets (exchange rate corrected, shares)

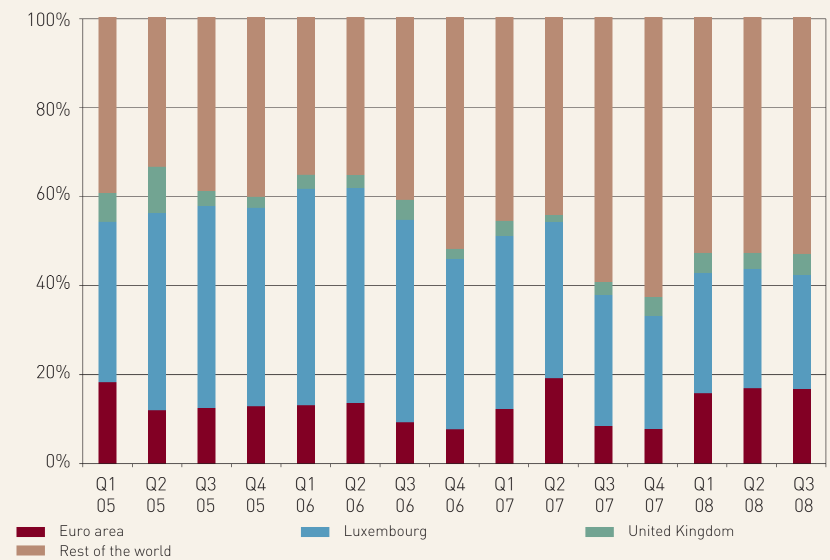



12 This change comprises not only the stock of US-dollar denominated investment, but also new parts issued.

The shift toward US dollar-denominated happened against the background of a significant appreciation of the dollar starting in 2008/Q2. MMFs investment strategy may have favored the appreciating currency in a low yield environment. As a result, currency risk appetite may have increased. This contrasts with the relative stability of the currency composition of portfolio over the rest of the period, and in particular over the period after 2006/Q1 when the US dollar depreciated vis-à-vis the euro. Similarly, it contrasts with the trend favoring yen-denominated assets despite its depreciation starting in 2006.

**The geographic distribution of portfolios confirms the shift toward the United States and Japan, both in deposits and in short-term securities other than shares**.

Chart 9
Geographic distribution of deposits (shares)




The geographic distribution of MMFs portfolio also illustrates the shift toward US dollar-and yen-denominated deposits (see rest of the world) and away from the euro area, including Luxembourg (*Chart 9*).

With the exception of Luxembourg, the same pattern of maturity shortening can be observed in the euro area, United Kingdom and the rest of the world. In the euro area, the share of less-than-one year securities rose to 46 percent in 2008/Q3 from just 26 percent in 2007/Q2 (*Chart 10*). Investment in all other maturities shrunk.

In Luxembourg instead, there was no increase in the share of less-than-one year securities but until the second half of 2008 (*Chart 11*). Given the past volatility of the maturity composition of short-term securities in Luxembourg in the face of large changes in exchange rates, the reason for this behavior remains unclear.

Chart 10
Maturity of short-term securities invested in the euro area (shares)

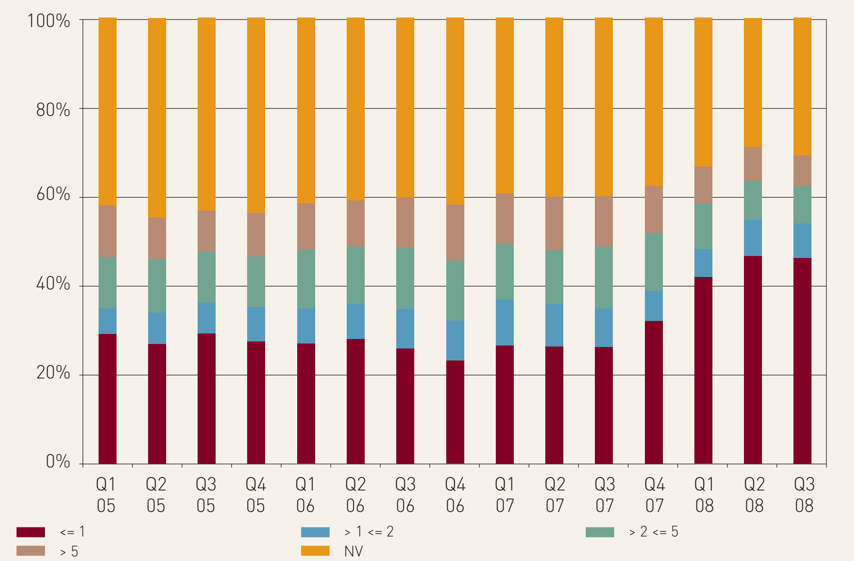
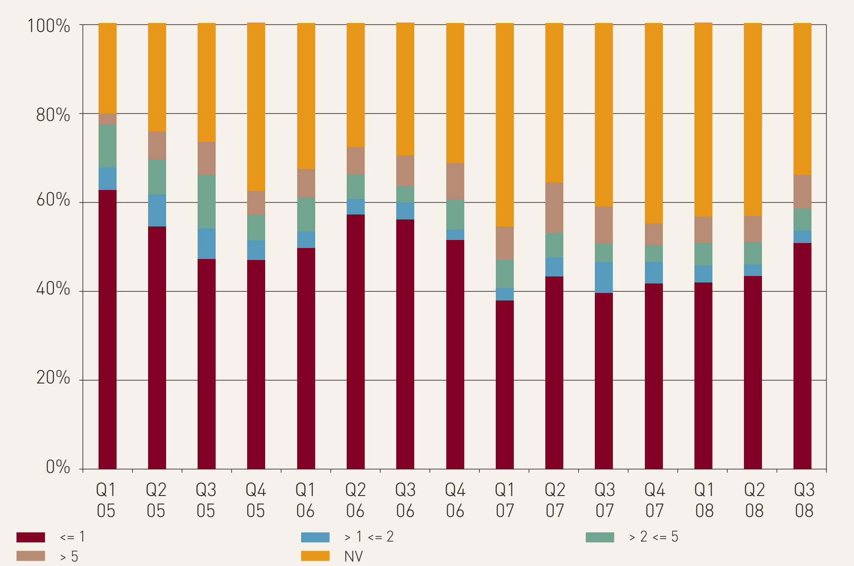



Chart 11
Maturity of short-term securities invested in Luxembourg (shares)



### 2.2 MMFS AND BANKS

**While for the Luxembourg banking sector the share of MMFs deposits is small, some banks' deposits base depends significantly on MMFs deposits**

Given the size of the MMFs industry and that most funds' sponsors are banks, from a systemic viewpoint, it is important to analyze the links between MMFs and banks during the current crisis. As discussed above, MMFs make relatively safe investment with low return, mostly bank deposits and short-term securities, where the issuer belongs to the general government and where the maturity is short. In addition, even if by law MMFs are authorized to invest in shares provided that they do not represent more than 15 percent of their portfolio, the sector has invested less than one percent of its portfolio in shares. So, overall, MMFs investments are liquid and of low risk.

Table 1:
MMFs deposits in banks at end-2008
(million Euros and percent)

| | | |
|---|---|---|
| Luxembourg | 29,249 | 27.7 |
| Other Euro area | 15,574 | 14.7 |
| Rest of the world | 60,896 | 57.6 |
| Total | 105,719 | 100.0 |

Table 2:
MMFs deposits share in Luxembourg banks total deposits as of 2008/Q3

| Percentiles | Frequency |
|---|---|
| 0 | 113 |
| 10 | 34 |
| 20 | 7 |
| 30 | 5 |
| 40 | 1 |
| 50 | 0 |
| 60 | 1 |
| 70 | 2 |
| 80 | 0 |
| 90 | 1 |

*Source: banks balance sheets*

For the banking sector as a whole, the share of MMFs deposits in total non-bank deposits is relatively small. At end-2008, MMFs held over 105 billion Euros of deposits in banks. However, only about 28 percent of that amount is deposited in Luxembourg domiciled banks (*Table 1*). In addition, that amount represents only 10 percent of the Luxembourg banks' deposits from non-bank clients.

Although for the banking sector as a whole, that amount may not be systemically significant, it may be important for some banks' deposit base[13]. During the current crisis, that was the case, and thus MMFs may indeed pose a systemic risk also in the future via a liquidity shock.[14] For three banks, the share of MMFs deposits in total deposits oscillate between 60 and 79 percent; it is in the 90th quartile for one bank (*Table 2*). During the year 2008, a few funds experienced rapid funds withdrawals. And as a result, they withdrew bank deposits and those banks that relied heavily on MMFs deposits experienced liquidity pressures. Those MMFs required access to liquidity lines from banks; the BCL did not provide liquidity support to Luxembourg MMFs.

### 2.3 CONCLUSION AND POLICY IMPLICATION

This study has found that MMFs responded to the extreme volatility of spreads, increased uncertainty, and falling returns, by shortening the maturity of their portfolio, and by shifting funds toward appreciating currencies. MMFs may not be exposed to currency risk, but their investment behavior can have important effects on the liquidity of sponsored banks. While it is true that for the banking sector as a whole, the share of MMFs deposits in total non-bank deposits is relatively small, some banks, whose deposit base depends heavily on MMFs deposits, may experience liquidity pressures following a run on MMFs. Therefore, MMFs, may have a systemic impact.

The main lesson from the current crisis is that runs on MMFs imply, by contagion, a liquidity risk to banks and to the financial sector at large. Under tranquil periods, MMFs portfolio shifts impact on monetary aggregates, and so they matter for monetary policy. This suggests that financial stability in Luxembourg requires that MMFs be subject to not only micro but also macrofinancial surveillance.

13 This is consistent with the simulations in Box 4.

14 As stated above, under the current regulatory framework, MMFs are subject to liquidity surveillance by the BCL.