



EUROPEAN CENTRAL BANK

EUROSYSTEM

EU BANKS' FUNDING STRUCTURES AND POLICIES

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Address

Kaiserstrasse 29
60311 Frankfurt am Main
Germany

Postal address

Postfach 16 03 19
60066 Frankfurt am Main
Germany

Telephone

+49 69 1344 0

Website

<http://www.ecb.europa.eu>

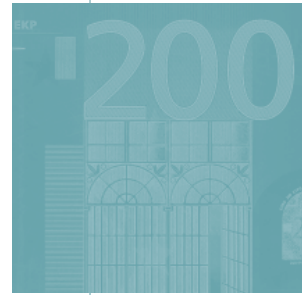
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+49 69 1344 6000

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I EXECUTIVE SUMMARY

PROJECT BACKGROUND AND APPROACH

In the light of recent developments on financial markets, the Banking Supervision Committee (BSC), decided to carry out an in-depth assessment of the impact the crisis is having on bank funding. This assessment, which covered the sources and cost of funding, as well as the way in which banks have managed their funding structures, was based on both market data and data published by banks. The report is based on the information available until end of March 2009. The analysis also benefited from a survey of 36 mostly medium-sized and large EU banks.¹

FUNDING SOURCES AND STRATEGIES HAVE ALTERED

As the crisis has unfolded, liquidity has become a scarce good and all funding sources have gradually been affected. Deposits have been affected to a lesser extent and central bank money has remained available throughout the turmoil, as central banks stepped up their efforts to support funding needs at an early stage in the crisis.

One immediate reaction on the part of banks that previously relied mainly on wholesale funding has been to change their funding to more stable sources. Surveyed banks confirm that deposits have become the preferred source of funding, albeit in increasingly competitive market conditions. Banks are also seeking to strengthen their deposit base by investing more in customer relations. The increased interest on deposits is reducing the potential market share of banks that were already reliant on retail deposits.

Given the extent of funding restrictions, coordinated action across central banks and governments has become necessary in order to alleviate the funding gap. Central bank action has focused on short-term funding, with maturities ranging from overnight to six months – and as long as one year in the case of the Bank of England. At the same time, government packages have mostly targeted longer-term

funding through guarantee schemes. However, these temporary measures have not yet managed to unlock longer-term liquidity. In fact, part of the liquidity that has been injected has found its way into central banks' deposit facilities in the form of precautionary hoarding of liquidity, or is simply being recycled in the overnight market.

Given the long-term funding constraints, banks' focus has shifted to short-term funding. In fact, the banks surveyed are more concerned about day-to-day market developments and the impact on their funding structures. This has made banks extremely sensitive to market developments. On an aggregate basis, this behaviour can represent a serious obstacle to the normalisation of funding, since it inhibits a long-term approach to funding. In fact, the banks surveyed were relatively pessimistic about the recovery of market funding and noted that it would probably take years for market funding to normalise.

Several of the banks surveyed conceded that government and central bank measures were key in helping to avoid a full-blown collapse of the banking system. However, certain banks stated that government measures had altered the level playing field between healthy and less healthy banks, and that 2009 would probably see banks' normal issuance activities being crowded out by government-guaranteed issuance. This crisis is, in some respects, also giving rise to a home-country bias. Since banks are more familiar with domestic markets, renewed funding structures seem to be pointing towards building a strong domestic investor base.

FUNDAMENTAL CHANGES IN MARKETS FOR BANK DEBT

The issuance of their own debt securities is an integral part of many larger banks' funding strategies. However, during the current financial

¹ The 36 surveyed banks were interviewed in the period between November 2008 and early January 2009. Of the 36 banks surveyed, 28 were single banks or parent banks of a banking group, and 32 had their headquarters in the euro area. The banks surveyed were mostly involved in retail banking, mortgage banking, corporate finance activities and asset management. This sample does not claim to be representative in either statistical terms or for the EU banking market.

crisis, confidence in banks as debtors has eroded, risk aversion has increased and investors such as money market and mutual funds have had to deal with their own liquidity difficulties (e.g. redemptions). Banks' debt issuance activities have been negatively affected, with both net issuance and debt instrument maturities decreasing. In parallel, investor demand for more short-term instruments such as certificates of deposit has increased. And while covered bonds initially appeared to be a viable replacement for off-balance sheet securitisation, their issuance has also dried up in a number of countries. Following the implementation of government rescue plans, unsecured bonds and covered bonds now have to compete with government-guaranteed instruments. How guaranteed and non-guaranteed instruments coexist within the bond market in terms of relative pricing, quantities and investor base will be a key factor in determining whether or not funding markets eventually reopen.

RENEWED IMPORTANCE OF COLLATERAL

Conditions in the repo market have tightened and become so constrained that the range of assets accepted as collateral has narrowed further, with government bonds more or less being the only type of collateral accepted. These constraints were translated into a generalised increase in haircuts², regardless of the seniority, maturity, rating or liquidity of the collateral. Banks surveyed for this report confirmed that these difficulties reinforced their perception that collateral management was a key element of their management of liquidity and funding. These difficulties have also given banks a greater incentive to accelerate investment in their collateral management and monitoring infrastructure. Some banks have increased the size of their strategic reserves of eligible assets in order to secure central bank contingency funding. Some of them have also increased the centralisation of their collateral management in order to optimise collateral and liquidity flows between different entities on a cross-border basis.

In this context, banks have also shown increased interest in central bank actions with regard to collateral (i.e. the loosening of eligibility

criteria and the recognition of new types of asset as eligible collateral). The extension of eligibility criteria allowed credit institutions to both reserve their highest quality assets for repo transactions in wholesale markets and maximise the use of collateral in central bank credit operations. In addition, some banks have been securitising part of their loan portfolios for the sole purpose of using the senior tranches as Eurosystem collateral. This has led to concern that central banks could end up being the main holders of securitised instruments, given the freeze in the securitisation markets and the fact that asset-backed securities account for a significant proportion of the collateral used by counterparties in Eurosystem credit operations.

FLAWS IN INTERNAL PRICING POLICIES

The tightening liquidity conditions have highlighted the flaws that developed in some internal pricing practices during the period of low interest rates and low liquidity premia. If funding costs are priced too cheaply internally, business units have an incentive to take risks by increasing their leverage and maximising volumes, as they are not being charged appropriately for the associated liquidity risk. The shortcomings of internal liquidity policies included overly optimistic assumptions about the unwinding of trades, cross-subsidisation of activities and the provision of inaccurately priced backstop credit lines. Moreover, liquidity risk was sometimes intentionally underestimated internally, in order to gain market share in the context of strong competition.

According to the banks surveyed, more attention is now being paid to internal pricing policies. Most banks have increased the cost of internal liquidity supplies, using broader criteria which now include the type of funding, the location of the subsidiaries, the nature of the business lines and the type of internal counterpart. Interestingly, some banks have allocated decision-making in this area to more senior management.

2 Sometimes up to 100%, preventing the asset from being used as collateral.

HURDLES IN RESTARTING MARKETS FOR BANK FUNDING

The BSC foresees a number of hurdles in restarting markets for bank funding.

- Government-guaranteed funding was intended to help rekindle the issuance of bank debt. The successful issuance of guaranteed bonds shows that this measure has been effective to some extent, especially as some banks have also been able to issue non-guaranteed bonds. Guaranteed debt appears to have been purchased by the type of investor which generally takes on exposure to government risk rather than corporate credit risk. This investor base tends to invest for longer periods of time and in a more stable manner than traditional investors in bank debt. The lack of overlap with the usual investors in bank debt is currently preventing guaranteed issuance from crowding out non-guaranteed issuance. However, in the long term, the traditional (credit risk) investor base will need to be encouraged to begin investing in bank debt again. There is currently no sign of this happening. In addition, there is some risk of government debt itself crowding out private debt.
- Few respondents presented views on when, or how, markets might begin functioning again. They emphasised the need for markets to be reassured regarding the health of the asset side of bank balance sheets before investor confidence could return. As regards the reopening of securitisation and covered bond markets more specifically, while it is essential that simple and transparent secured structures be established, it is also of vital importance to investors that liquidity be restored to these markets.
- The deleveraging process and the drying-up of funding markets may well also constrain banks' balance sheet growth and thereby restrict their ability to provide credit to the economy. This, in turn, could impact

negatively on the probability of retail and corporate customers defaulting. Such deterioration in the credit quality of banks' customer base could then feed back to banks' balance sheets, further constraining their ability to fund themselves.

CHALLENGES FOR BANKS

The BSC has identified two immediate challenges as regards the funding of EU banks.

- First, increasing the share of retail deposits in order to strengthen a bank's overall funding structure is desirable, but should not be viewed as a panacea preventing bank runs, as retail deposits are generally held at sight and do not, therefore, protect banks from a sudden outflow of funds. The credibility of the deposit guarantee scheme is essential in avoiding deposit runs. Maturity risk can be mitigated by lengthening the maturity of funding wherever possible, regardless of the type of funding. Ultimately, however, the only real antidote to a bank run is to ensure that the quality of the asset side of the balance sheet is sufficient to ensure continued investor confidence. Trust in the relevant bank's governance and risk management are also essential.
- Second, the BSC is of the opinion that it is important for banks to define their own exit strategies with a view to reducing their reliance on government support. One possibility would be to improve their knowledge and monitoring of their investor base for primary debt issuance. This would enable them to develop better relationships with large counterparties, whose decisions on whether or not to continue funding the bank can be key in determining the bank's funding position, or even very existence. In addition, knowing investors better would enable banks to better predict what stresses these counterparties might come under, in turn allowing banks to better manage their forward-looking liquidity positions. The current crisis has also shown that it could

be useful for banks to be aware of the geographical spread of their investor base. As a matter of fact, it appears favourable to have a certain degree of diversity in the composition of debt investors to cater for times of stress. Domestic investors appear to have been less “flighty” than investors from abroad, perhaps partly because they are more aware of the particular features of their local banks.

CONCLUSIONS

In concluding its analysis, the BSC is of the view that banks’ restricted lending activities have led to some reshaping of the banking industry, with particular pressure being placed on certain business models (i.e. funding models based almost exclusively on wholesale sources and business structures focused on retail-secured lending or specialist lending activities). Banks are becoming more domestically oriented in their activities, partly in response to the prevailing counterparty risks, but also on account of the somewhat national orientation of government support. Banks are also seeking simplicity in their structures.

2 PROJECT BACKGROUND

In the past few years, banks have strived to reduce what they perceived to be excessive dependence on deposit-based funding by having recourse to market-based funding. The development of asset securitisation played an important role in fostering this shift, as it facilitated the expansion of the funding tools available to banks. The current crisis has challenged this development and highlighted the following issues:

- Decreasing *availability of funding* as a result of the freezing of wholesale and interbank markets.
- *Rising cost of bank funding*, partly as a result of increased bank counterparty risk.
- *Shortening of funding maturities* challenges asset liability management (ALM) and

profitability in the context of relatively flat or even inverted yield curves in the euro area. This results from contingency funding plans that did not fully cover the risks of maturity mismatches on and off the balance sheet.

- *Currency mismatches in funding* have occurred as funding sources in foreign currencies have become severely restricted.

In the light of these issues, the BSC decided to carry out an in-depth assessment of the impact that the crisis is having on bank funding.

The assessment was based on both market data and data published by banks. The report is based on the information available until end of March 2009. The analysis also benefited from a survey of 36 mostly medium-sized and large EU banks, 28 of which were single banks or parent banks of a banking group, and 32 of which had their headquarters in the euro area.³ The survey was carried out by means of a questionnaire focusing on the main aspects of bank funding. The answers received reflect the opinions and policies of this sample of banks. The BSC does not claim that the sample is representative of the EU banking market in statistical terms.

The report is structured as follows: Section 3 covers the changes in banks’ funding sources and strategies, as well as the scope of public authorities’ actions to restore access to funding; Section 4 covers developments in bank debt, including debt investors’ behaviour and composition; Section 5 discusses collateral and its management, dealing with both internal developments within banks and developments or influences resulting from changes in central banks’ collateral frameworks; Section 6 discusses the role played by the internal pricing of liquidity within banks and its impact on incentives; and Section 7 looks at the immediate challenges for banks’ funding, the government measures aiming at restarting funding markets,

³ Participating countries involved in the project have been: Belgium, Finland, France, Germany, Hungary, Italy, the Netherlands, Portugal, Spain and the United Kingdom.

and banks' views on how and when markets might restart.

The report also includes three annexes, which provide additional information on government guarantee schemes, as well as on the pricing of internal transfers and the importance of such pricing as underlined in recent supervisory initiatives.

3 FUNDING SOURCES AND STRATEGIES

The funding strategies of banks have changed substantially owing to the financial market crisis. The economic environment prior to the crisis favoured funding structures that were highly dependent on ample liquidity. When that ample liquidity unexpectedly ceased to be available, banks that relied heavily on market funding were forced to make significant adjustments, not only to their funding strategies, but also, in some cases, to their business models.

Conceptually, commercial banks fund their balance sheets in layers, starting with a capital base comprising equity, subordinated debt and hybrids of the two, plus medium and long-term senior debt. The next layer consists of customer deposits, which are assumed to be stable in most circumstances, even though they can be requested with little or no notice. The final funding layer comprises various shorter-term liabilities, such as commercial paper, certificates of deposit, short-term bonds, repurchase agreements, swapped foreign exchange liabilities and wholesale deposits. This layer is managed on a dynamic basis, as its composition and maturity can change rapidly with cash flow needs and market conditions. This funding structure is usually relatively stable, and changes in the structure are fairly sluggish.

The following sections focus on the changes that have taken place in these funding layers since the crisis began, highlighting the funding conditions and sources beforehand and the main policy measures taken in order to mitigate funding restrictions in markets.

3.1 GENERAL TRENDS: FUNDING SOURCES

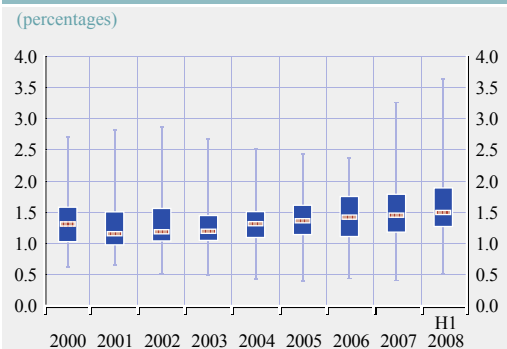
BEFORE THE CRISIS: ABUNDANT SOURCES OF FUNDING FUELLED BANK LEVERAGE

Before the crisis, the global economy was characterised by strong economic growth, low interest rates and risk premia, and abundant liquidity. At the same time, banks' leverage was expanding rapidly. The growth of loan stocks was partly offset by the growth of deposits. However, despite the fact that deposits were increasing, the magnitude of lending surpassed that of deposits in several banks (see Chart 1).

As banks' stocks of deposits were not sufficient to provide an adequate base for their growing business, banks resorted to other available sources for funding, such as securitisation (through the "originate to distribute" model), covered bonds and interbank markets. Given the availability of ample liquidity, it was not difficult for banks to raise funds from the markets. This is clearly visible from the expansion of banks' balance sheets. For example, between December 2003 and December 2007 the total balance sheet of euro area MFIs increased by 53%, rising from €14.6 trillion to €22.3 trillion.⁴

4 Source: Consolidated balance sheet statistics for euro area MFIs (available on the ECB's website).

Chart 1 Ratio of loans to deposits in large EU banks (corrected for extreme outliers)



Source: Bankscope.
Note: Box plot diagram indicating minimum value, interquartile range, median and maximum value.

(i) **Maturity mismatches**

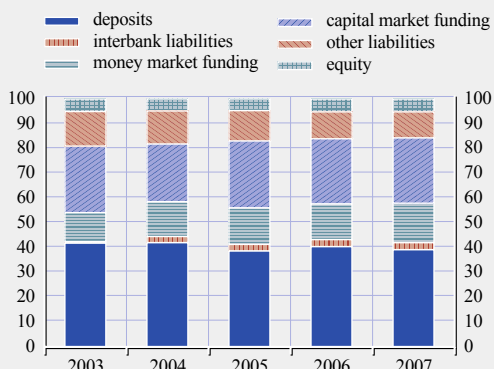
A change in the funding trends of European banks seems to have occurred in 2003, with long-term funding beginning to slightly decrease and short-term funding starting to increase (see Chart 2). In 2003, deposits accounted, on average, for around 42.4% of total liabilities, with capital market funding accounting for 27%. The corresponding percentages were 39.3% and

26.6% respectively in 2007. At the same time, from 2003 onwards covered bonds were also used in many European countries as an additional source of funding. Covered bonds outstanding in Europe increased by 22.7% between 2003 and 2007, rising from €1,686 billion to €2,069 billion (see Chart 3). The expansion of covered bond markets was considerable, with the number of issuing countries increasing.

PATTERNS IN FUNDING SOURCES PRIOR TO THE CRISIS

Chart 2 European banks' liabilities, including net interbank liabilities (overall structure)

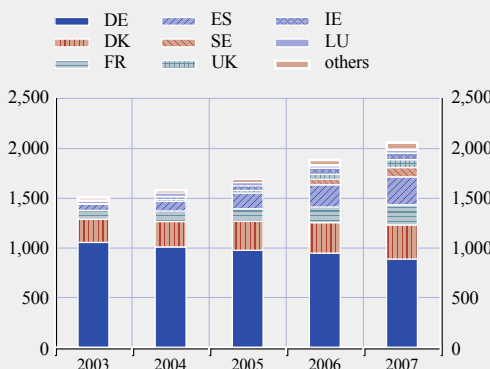
(percentages)



Source: Bankscope.

Chart 3 Covered bonds outstanding in Europe (long term)

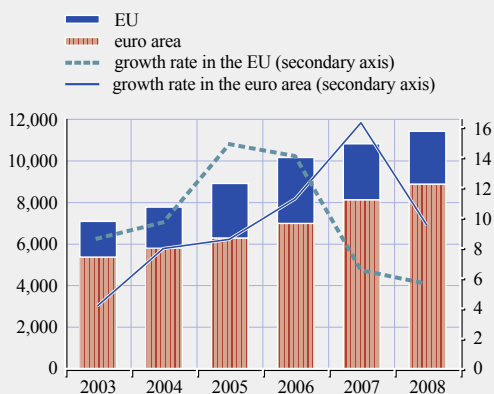
(EUR billions)



Source: European Covered Bond Council.

Chart 4 Interbank loan (short term)

(EUR billions (left-hand scale); percentages (right-hand scale))

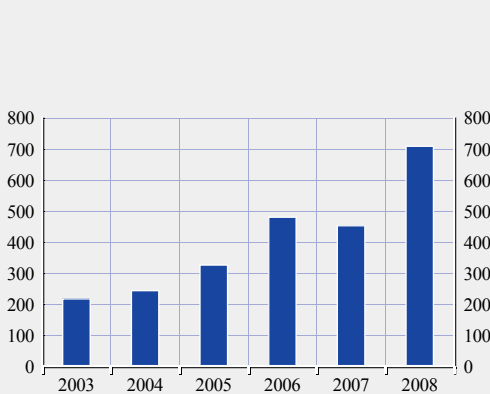


Source: ECB.

Note: UK data do not include interbank loans outside the euro area and the United Kingdom.

Chart 5 Growth of securitisation in Europe (long term)

(EUR billions)



Source: European Securitisation Forum (see: http://www.europeansecuritisation.com/Market_Standard/ESF_Data_Report_Q4_2008.pdf).

Between 2003 and 2007 money market funding providing short-term liquidity (e.g. certificates of deposits, commercial paper and short-term bonds) increased as a percentage of total liabilities in European banks' balance sheets. In 2003 money market funding accounted for 11.8% of total liabilities, while at the end of 2007 it accounted for 16%. In particular, interbank markets became a more prominent source of short-term funding for banks. In net terms, 0.1% of EU banks' total liabilities were derived from interbank markets in 2003, and 2.9% came from this source in 2007. The annual growth rate of interbank loans reached 14% in the EU in 2006, and 16% in the euro area in 2007 prior to the crisis (see Chart 4).

In addition, securitisation increased considerably (see Chart 5). By the end of 2007 annual issuance volumes had grown by 129% in comparison with 2003, reaching €497 billion. In 2007, the two most popular types of securitised assets were residential mortgage-backed securities and collateralised debt obligations (CDOs), which accounted for 52% and 27% respectively of total securitised assets.⁵ Significant use was also made of commercial mortgage-backed securities (CMBSs). The use of other collateral underlying securitised assets declined considerably, falling to 11% of total securitised assets in 2007.

A general look at banks' funding structures highlights the existence of national and institutional differences. Such variation can be explained by the level of sophistication of financial markets and banks' business models.

- For instance, countries with less mature financial markets tend to be more reliant on deposits for their funding. In some cases, deposits account for up to 85% of banks' total liabilities. In more open financial markets, deposits constitute around 30-50%⁶ of banks' total liabilities.
- Banks' core activities also affect the funding structure. The relative shares of deposits and market funding may vary considerably depending on the focus of the

banks' activities (i.e. retail, market-related or universal).

It is also noteworthy that banks' off-balance sheet items increased rapidly in the years prior to the crisis. In fact, many banks had financial vehicles that were not included in their balance sheets, but which made investment decisions for which their parent companies were liable. Off-balance sheet vehicles offered both short-term (through asset-backed commercial paper) and long-term (through securitisation) sources of funding.

All in all, the growing imbalance between the longer-term lending to customers and the shorter-term funding of banks' activities created a maturity mismatch in banks' balance sheets and exposed banks to increased funding and counterparty risks.

(ii) Currency mismatches

In the same way, banks' funding patterns also helped to create a dangerous currency mismatch. Traditionally, there are two main models for cross-currency liquidity management in banking.

- Some banks control the maturity profile of their assets and liabilities irrespective of their currency and make up for shortages in a given currency through short-term foreign exchange swaps.
- Others manage their liquidity risk exposure separately for each individual currency.

Between 2000 and mid-2007 European banks' net long US dollar positions grew to around USD 800 billion, being funded in euro. This created significant exchange rate risk and considerable dependence on the foreign exchange swap market, which penalised banks which had adopted the first approach.

⁵ "Securitized issuance in Europe by type of collateral" (2007); Sources: Thomson Financial, JP Morgan, Merrill Lynch, Bloomberg.

⁶ Source: ECB.

THE IMPACT OF THE CRISIS: SCARCER AND COSTLIER SOURCES OF FUNDING

The financial turmoil that started in summer 2007, triggered by the mortgage problem in the United States, strained banks' funding sources and had a considerable impact on banks that relied heavily on wholesale funding (e.g. Northern Rock). The declining confidence that resulted from the rapid deterioration of ratings, valuation losses for securitised assets and the appearance of off-balance sheet commitments in banks' balance sheets heightened counterparty risks and made banks and other investors more cautious about lending to one another. As confidence deteriorated, a severe dislocation took place in the global funding network, gradually affecting all funding markets. The first market affected was the interbank market. Banks began to hoard liquidity for precautionary reasons and to overcome fire sales. By then, a major liquidity breakdown had taken place. Market liquidity for mortgage-related securities and structured credit products rapidly disappeared. Government bond yields plunged as investors rejected risky assets and turned to the relative safety of government securities. The collapse of Lehman Brothers in September 2008 exacerbated

the loss of confidence. The shock spread rapidly from the interbank market to all other markets, such as the CDS market for financials and non-financials, the commercial paper market, markets for covered bonds and bank bonds, and other long-term funding markets. Central banks provided liquidity injections to support short-term funding needs (see Chart 6).

Another consequence of the financial crisis has been increasing funding costs as the cost of market-based bank financing via bonds and equities remains at historically high levels (see Chart 6). Most major CDS indices have exceeded their March 2008 peaks, receding only on speculation that the most severely affected banks would receive some kind of government assistance. However, following the implementation of rescue plans (see Table 1 and Section 3.3), some uncertainty still remains. Government support has allowed banks' CDS premia to be reduced. However, because of banks' changing fundamentals related to asset write-downs, counterparty risk and the impact of the general economic downturn, trends in CDS spreads have become more uncertain. A breakdown of credit and non-credit risk

Chart 6 Funding sources during the crisis

	Pre-crisis	August 2007 to summer 2008	Lehman Brothers' Failure	After government rescue plans	2009 outlook
	↓ ↓ ↓ ↓ ↓				
Short-term financing					
Interbank	●	●	●	●	●
Certificates of deposits	●	●	●	●	●
Deposits	●	●	●	●	●
Central bank	●	●	●	●	●
Long-term financing					
Non-guaranteed bonds	●	●	●	●	●
Guaranteed bonds	○	○	●	●	●
Covered bonds	●	●	●	●	●
Securitisation	●	●	●	●	●

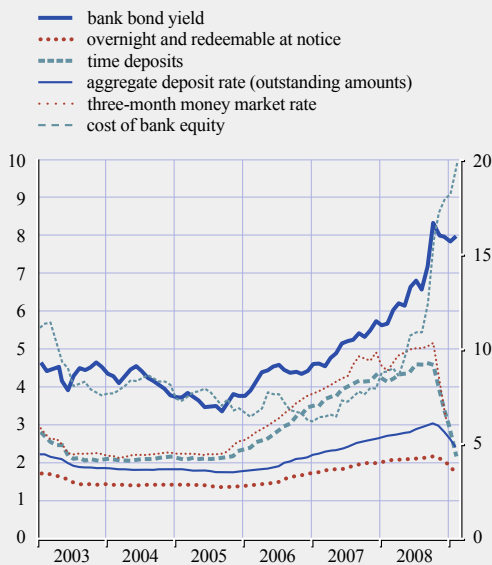
Note: This figure tries, by way of a "traffic light" analogy, to illustrate, at the various stages of the crisis, the availability of funding sources for the European banking system. It distinguishes between three states:

- Green: available;
- Orange: signs of difficulties in gaining access;
- Red: impaired;
- White: not relevant.

Please note that this is intended to reflect the overall situation in Europe and may not reflect specific national situations.

Chart 7 Cost of funding banks through deposits and unsecured debt

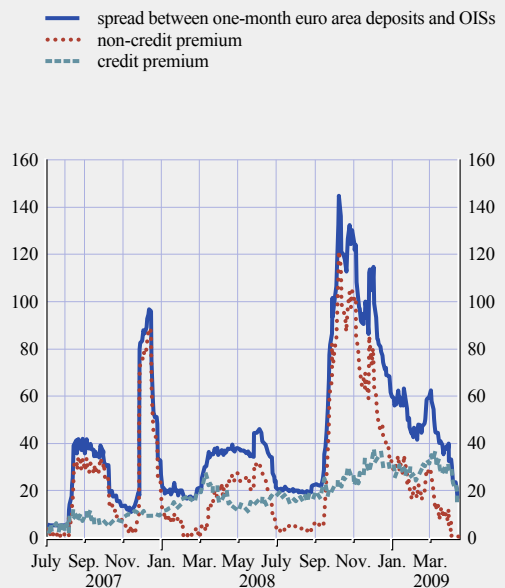
(percentages; right-hand scale applies to “cost of bank equity” time series only)



Source: ECB.
Notes: Monthly data from January 2003 to February 2009. The cost of bank equity is based on end-of month figures, while bank bond yield, money market rate and underlying deposit rates are monthly averages. Deposit rates are weighted averages of different maturities: time deposits as well as overnight and redeemable at notice rates are weighted using new business volumes; aggregate deposit rate is weighted using outstanding amounts. Bank bond yield refers to iBoxx Euro Corporate Bank Index. Cost of bank equity is calculated using the three-stage dividend discount model. For more information, see the box entitled “A three-stage dividend discount model for the euro area” in the article “Extracting information from financial asset prices” in the November 2004 issue of the ECB’s Monthly Bulletin.

Chart 8 Spread between one-month euro area deposits and OISs and its breakdown into credit and non-credit (mainly liquidity) components

(basis points)



Sources: Bloomberg and ECB calculations.
Notes: The proxy for the credit premium was the CDS spread on the investment-grade debt of large and complex banking groups in the euro area. Both components were obtained using constrained linear optimisation. The following restrictions were imposed: the credit component should deviate as little as possible from the CDS spread; and both components must be non-negative and add up to the spread between euro area deposits and OISs.

premia shows that the non-credit component surged after September 2008 (see Chart 8).

The increase in funding costs and scarcity also reached the foreign exchange swap market, which gradually broke down, as shown by the spectacular widening of bid-ask spreads in this market (with the spread for overnight maturities widening to more than 7 basis points, compared with only 0.1 basis point previously). European banks had to pay considerable penalty rates when funding their US dollar positions. Even in cases where US dollar-denominated assets were funded in US dollars, banks faced funding issues where they had maturity mismatches, as some markets were not liquid enough to roll the funding.

The shortage of US dollars was exacerbated both by the fact that banks had major holdings in US ABS markets, on which they had to issue write-downs, and by the re-intermediation of most of the banks’ off-balance sheet vehicles, the holdings of which were mainly US dollar-denominated. In order to ease tensions in the money market, the Federal Reserve, the ECB, the Bank of England and the Swiss National Bank announced jointly in October 2008 that they would supply US dollar funding at various maturities. Central banks increased and extended US dollar funding facilities both through auction facilities (i.e. the US Term Auction Facility) and through foreign exchange swaps. These measures soothed to some extent the dislocation in the

foreign exchange swap market. After reaching a peak in October 2008, foreign exchange swap spreads decreased markedly and conditions on the foreign exchange swap market eased towards the end of 2008, although conditions have not returned to their pre-crisis levels.

3.2 CONSEQUENCES OF THE CRISIS FOR BANKS' FUNDING STRATEGIES

The intensity of the problems forced banks to adopt more comprehensive measures. Being reliant on wholesale funding, investment banks, such as Goldman Sachs and Morgan Stanley, dramatically changed their business models. Banks tried to adjust their funding profile, favouring more stable sources of funding. Indeed, competition for more traditional sources of funding, such as retail deposits, has increased in the banking system. However, this has entailed certain costs. The crisis revealed that some banks with extreme reliance on retail funding were competing by means of high interest rates or by making use of internet banking in order to attract more deposits. However, clients using these deposit products were not always sufficiently aware of the conditions of the applicable deposit guarantee schemes.

Banks were forced to reduce their exposures across business lines (affecting, for instance, hedge funds and other leveraged investors), as well as cross-border funding for financial institutions in emerging markets. Central banks and governments (see Section 3.3) were forced to step up their efforts in order to restore confidence and support the increasing funding needs. Indeed, banks did not have enough time to carry out a comprehensive review of their funding structures and needed help from central banks and governments.

The banks surveyed for this report confirm the adoption of more active funding strategies. They explain that in general, banks have raised the quality of their liquidity risk management and have become more sensitive to the current funding conditions. Around 25 of the 36 banks surveyed have changed their ALM policy. Most

banks have increased the frequency of their liquidity reporting. Funding plans (which are usually annual) are not easy to pursue given the uncertain market conditions. However, it is surprising that only a small proportion of banks indicated that they were implementing their contingency funding plans. The focus has been shifted to short-term funding. In fact, banks are monitoring market developments more closely. This would suggest that banks are more concerned about daily developments and the impact on their funding structures. Overall, there has been an increase in demand for central bank liquidity, which has increased the attention paid to collateral management. Some banks that were already heavily reliant on deposits have chosen to strengthen their retail client base. This source of funding is considered constrained by certain banks, as the growth rate of retail funding can face limits.

Given the breakdown in market funding, support from public authorities has become important in filling the funding gap and trying to reduce the uncertainty surrounding counterparty risk.

3.3 ACTION BY PUBLIC AUTHORITIES TO RESTORE BANKS' ACCESS TO FUNDING

ACTIONS BY CENTRAL BANKS AND GOVERNMENTS

Central banks initially sought to stabilise overnight rates, but given the depth of the liquidity retrenchment, the focus quickly shifted towards bridging the breakdown of market funding through concerted action intended to strengthen liquidity conditions. It became obvious to authorities that uncoordinated policy action had to be replaced by coordinated, comprehensive and global central bank and government action to provide short-term liquidity and ensure the availability of sufficient medium-term funding for the banking system. For instance, the Federal Reserve, the ECB, the Bank of England and the Swiss National Bank supplied US dollar funding at various maturities to ease tensions in the money market. Also, euro area countries made coordinated announcements of guarantees and equity injections with the aim

of restarting interbank lending and replenishing banks' capital positions. Additionally, central banks have substantially extended their list of eligible collateral. This new eligible collateral is, however, generally subject to additional haircuts (see Section 5.2 and Box 3).

In addition, in more and more countries, authorities had to take decisive action in support of key financial institutions with liquidity

problems. Banks merged with government support, or received capital injections, while in other cases banks had to undergo wholesale nationalisation. The scope and magnitude of the bank rescue packages also meant that significant risks were transferred onto government balance sheets.

Owing to the intense problems in market funding during the crisis, central bank action had to be

Table 1 Overview of government support for banks during the crisis

Country	Capital injection	Guaranteed issuance of bonds	Asset protection scheme	Deposit insurance limit
AT	✓	✓		Unlimited
BE	✓	✓		€100,000
CY				€100,000**)
DE	✓	✓		Unlimited*)
ES		✓	✓	€100,000
FI				€50,000
FR	✓	✓		€70,000
GR ⁺⁾	✓	✓		€100,000
IE	✓	✓		Unlimited***)
IT				€103,291.38
LU	✓			€100,000
MT				€100,000
NL	✓	✓		€100,000
PT	✓	✓		€100,000
SI				Unlimited
SK				
BG				€50,000
CZ				€50,000
DK		✓		Unlimited
EE				€50,000
HU				HUF 13 million - €45,000 *)
LT				100% insurance for all deposits up to €100,000
LV	✓			€50,000
PL				€50,000
RO				€50,000 for individuals and €20,000 for companies
SE	✓	✓		€45,673
UK	✓	✓	✓	GBP 50,000
CH	✓		✓	No scheme
NO				€212,067
AU		✓		Unlimited
US	✓	✓	✓	€189,782

Source: Official publications by the governments and press releases.

Notes: A tick mark indicates whether the indicated support measures have already been activated by banks in the respective country;

*) Political commitment to guarantee deposits by the government on an unlimited basis over the threshold given by the formal, law-based deposit guarantee scheme;

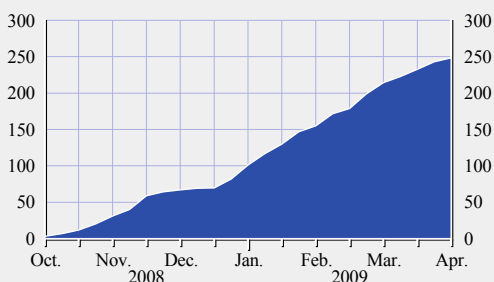
***) Political commitment to raise the threshold of the formal, law-based deposit guarantee scheme limit from €20,000 to up to €100,000; the column "assets protection scheme" encompasses schemes with different types of assets (for example asset purchase swaps with high – as in Spain – or low quality assets);

****) While some deposits receive unlimited protection as a result of the guarantee scheme, the actual deposit protection limit remains €100,000;

+) An additional measure in Greece involves government bonds made available to banks against collateral.

Chart 9 Cumulated amount of guaranteed issues by banks in the EU

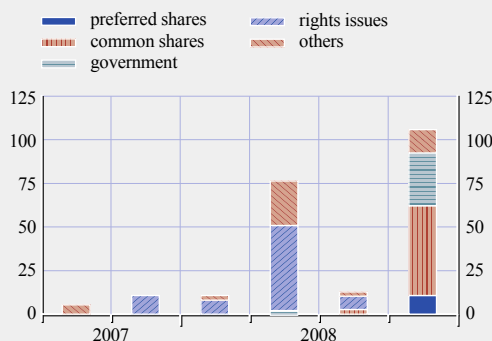
(EUR billions)



Source: Dealogic.

Chart 10 Capital injections in European banks by type

(EUR billions)



Source: BIS.

complemented with additional government action (see Table 1). Central bank action has focused on short-term funding, while government packages have mostly targeted longer term-funding through guarantee schemes. Government support in the form of deposit and credit guarantees should help to stimulate funding across markets by halting the deterioration of confidence in the institutions and possibly the sector. Additionally, funding guarantees should facilitate new debt issuance from banks that may not otherwise have taken place, while deposit guarantees may prevent an unexpected outflow of funds from banks dealing with confidence problems. Capital injections can also facilitate banks' access to funding, since higher capital ratios improve banks' solvency and image. However, banks that have not accessed government capital may be forced to increase their capital ratios to avoid being penalised in the markets. In any case, these actions are meant to be temporary, and private sector funding should gradually regain its share.

Government support through capital injections and guarantees has increased since their implementation (Chart 9 and Chart 10). Adjustments are being made to the conditions governing these schemes in order to maximise their impact (e.g. UK adjustment and NL proposal to improve the effectiveness of the

guarantee scheme by increasing maturity). Unfortunately, these temporary measures have not yet managed to unlock markets. In fact, part of the liquidity that has been injected into markets has found its way to the central bank deposit facilities for precautionary reasons.

BANKS' ASSESSMENT OF THE EFFICIENCY OF PUBLIC INITIATIVES

The banks surveyed outlined the benefits and challenges of government support. Government measures were absolutely necessary and avoided a systemic crisis. Despite the acute liquidity conditions, European banks were able to end 2008 without significant funding problems. However, the measures altered the level playing field between healthy and less healthy banks. Concerns have been expressed regarding the crowding-out of private sector investments as a result of the large volume of government debt issuance. Several banks were pessimistic about the prospects of funding normalisation. Many considered this would be a long process given the leverage levels of consumers, banks and other industries, perhaps requiring a few years. In fact, one bank pointed out that the credit market, which was firm-based and operated on a "sole" name, has become a "sovereign" market. It would take time to reverse this situation. More generally, the BSC notes that, given the evolving

nature of government support as the crisis deepens, potential structural effects⁷ on the banking system would not be seen immediately, but rather in the medium to long term. As governments seek to enforce exit strategies, in some cases funding becomes more expensive with time. Furthermore as more funding is required for different banks in different countries, funding costs could also rise. The banks surveyed concluded that even if liquidity became available, future funding costs would be much higher than in the past. This suggests that the banks' outlook is still somewhat sombre.

Overall, the implementation of these measures should avoid crowding out borrowers and should seek to maintain a level playing field across countries. Furthermore, the measures should not only focus on "national interest", but should also take into account the implications for cross-border funding, given the international dimension of funding problems.

7 However, it is still uncertain if structural effects will materialise, since government support is meant to be only temporary.

Box 1

GUARANTEED VERSUS NON-GUARANTEED FUNDING: PRICING AND IMPLEMENTATION DETAILS

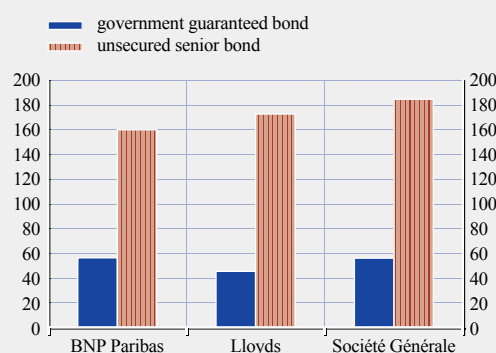
Since autumn 2008 EU governments designed recapitalisation and guarantee schemes for their respective banking sectors. The coordination process at EU level ensured that, although the costs differ for the various European guarantee schemes, they are converging towards a fee of 50 basis points for issues of less than one year, and 50 basis points plus the median five year CDS spread between 1 January 2007 and 31 August 2008 for issues with more than one year maturity.

According to Dealogic, by beginning of April 2009 the total volume of state-guaranteed bonds in Europe had grown to nearly €250 billion since issuance began in October 2008 (see Chart 9), demonstrating the ongoing structural adjustment within the banking system. Excluding Ireland and Denmark (which guarantee all outstanding and newly issued bank debt), the overall potential volume of European state-guaranteed bank debt amounts to more than €1,650 billion (see Annex 1).

Interestingly, during the same period a few EU banks have issued on an unsecured basis. The comparison of the guaranteed versus the unsecured issuance conditions in Chart might not be fully appropriate to, in particular, different maturities, different guarantee schemes and seniorities of the issuance, but it nevertheless provides an insight into the price differences currently observable in financial markets. It should be noted that there is an important gap between the cost of guaranteed and non-guaranteed issuance (about 100 basis points), but banks have succeeded in issuing larger amounts with longer maturities without guarantee.

Comparison of guaranteed versus unsecured bank bond issuance prices since October 2008

(spread in basis points over mid-swap rate)



Sources: Banque de France and Bank of England.

4 BANK DEBT COMPOSITION AND INVESTORS

For many larger banks, the issuance of own debt is deemed to be an integral part of their funding strategy. However, during the current financial turmoil, confidence in banks as debtors has eroded and, as a consequence, the debt securities issuance activity of the entire banking sector has been negatively affected. Debt investors, which in the past provided sufficient demand for bank debt, have changed their behaviour and instead sought out safe-haven debt, such as government securities. Based on quantitative data and the results of the survey conducted among banks, this section provides an insight into recent developments in the issuance of bank debt, as well as in the role and composition of investors in banks' debt.

4.1 DEVELOPMENTS IN THE ISSUANCE OF BANK DEBT SECURITIES⁸

As Chart 11 illustrates, gross bond issuance by large EU banks decreased significantly in 2007 and 2008 from a relatively high level of issuance in 2006 (a decrease of nearly 33%). Statistics on issuance of euro area MFI debt securities⁹ show that, at the end of the third quarter of 2008, the net issuance of debt securities turned negative, indicating that gross issuance was less than the outstanding amount

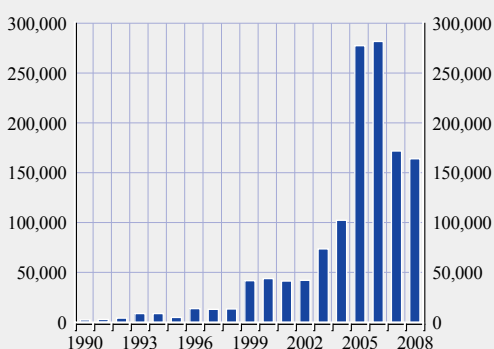
maturing in September 2008. However, the net issuance of debt securities by euro area MFIs was slightly positive in October and November 2008, although this can be partly attributed to the government guarantee schemes. Net issuance turned slightly negative again in December 2008.

There are two types of constraint with regard to new issuances: first, quantitative limits and, second, maturity and price limits. Before the crisis, the maturity of debt securities shortened owing to the decrease in quantitative limits for issuing long-term securities. Delimited quantitative limits lead to higher than expected yields for longer-term issuances, giving impetus to banks to make adjustments by shortening the maturities of debt securities. This adjustment led to a relatively smaller increase in the cost of funding, but caused higher funding liquidity risks.

Statistics on euro area MFI debt securities confirms the shortening of debt securities.¹⁰ An analysis of the maturity composition of new issuances from May 2008 shows that there was a strong decrease in terms of the proportion of long-term issuances (see Chart 12). The issuance of short-term debt securities continued to be more robust than that of long-term securities until October 2008.

Chart 11 Bond issues by large EU banks

(EUR millions)



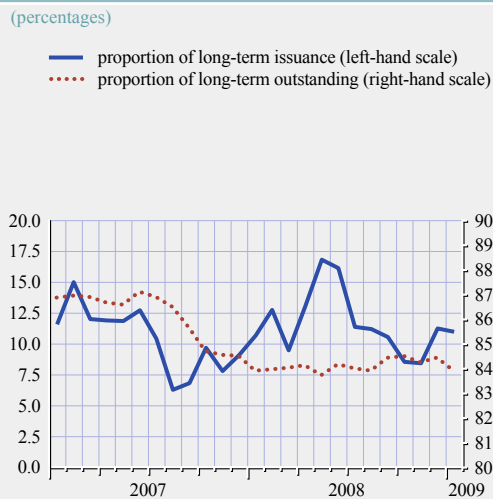
Source: DCM Analytics.

8 According to MFI data definitions, debt securities are securities other than shares. Debt securities are negotiable and may be traded on secondary markets. They do not grant the holder any ownership rights in the issuing unit.

9 In this part of the section, euro area level security statistics are used in some cases as there is insufficient information on security issuances by MFIs at EU level, thus EU Member States outside the euro area are not covered. Although this approach could be partially validated by the fact that, in non-euro area central and eastern European (CEE) member states, the individual activity of issuing debt securities could be limited to subsidiaries of foreign banks because parent banks provide funding via their own security issuances. The banking sectors of Denmark, Sweden and the United Kingdom, and the more independent banks of CEE countries are not covered.

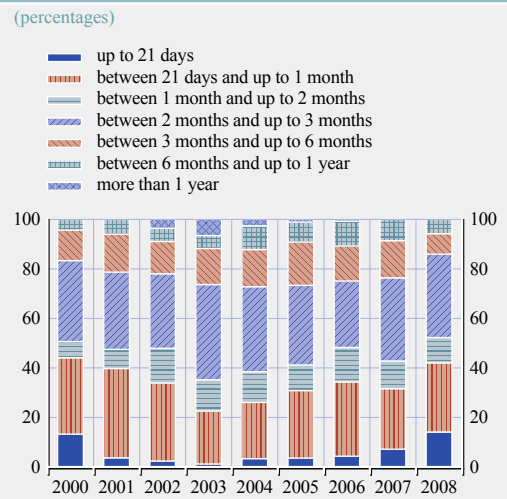
10 It is worth mentioning that statistics for the fourth quarter of 2008 are not available, so that the period following the collapse of Lehman Brothers cannot be identified in our statistics. Also, the government guarantee schemes have had a significant effect on new debt issuances (see Box 1 for more details).

Chart 12 Maturity composition of gross debt securities issuances and outstanding amount by euro area MFIs



Source: ECB.
 Note: Long-term means an original maturity of over one year.

Chart 14 Composition of issuance of certificates of deposits by large EU banks by maturity bucket

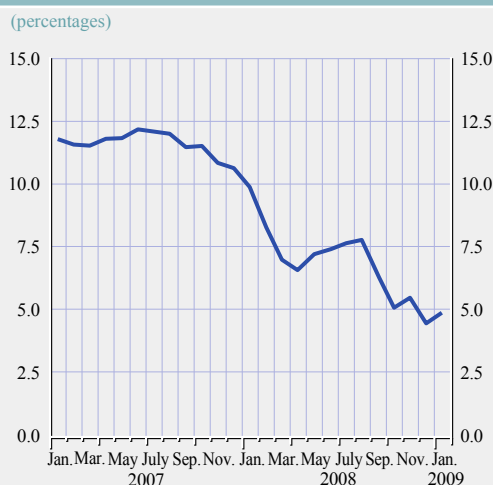


Source: Dealogic CP Ware.

With regard to outstanding debt securities, a gradual decrease in the proportion of long-term securities has been observed since the beginning of the financial turmoil (see Chart 13). This is a natural consequence of changes in the patterns of issuance influenced by the global investment climate in 2007 and 2008.

Competition among different debt instruments is, of course, to a large extent dependent on current market conditions and risk appetite. As the financial crisis has raised uncertainty as to future developments, this also had an impact on maturities, which have generally shortened. This is reflected in developments in Certificates of Deposits (CDs)¹¹ (see Chart 14).

Chart 13 Year-on-year changes in outstanding debt securities issued by euro area MFIs



Source: ECB.

As Chart 14 shows, in 2008 the share of short-term CDs with maturities from 21 days to three months rose from 76% to 86%, recording market growth compared with the previous year. At the same time, the total volume of CDs issued by large EU banks grew by around 30%¹² in the same period. This shows that there was strong demand for such instruments with shorter maturities and normally fixed interest rates.

In normal times, covered bonds might be issued with favourable conditions, as they provide a high degree of safety for investors. In the case of insolvency of the issuer, covered bonds holders may benefit from priority utilisation of the assets

11 Mostly defined as tradable money market securities issued by banks with maturities of between 30 days and five years.

12 Volumes issued: in 2007, €8.6 billion and in 2008, €11.1 billion (Source: Dealogic CP Ware).

financed by these bonds. So, such instruments can be seen as a source of funding for banks at a comparably lower cost. Since many governments stand ready to provide state guarantees for new debt in the current crisis, these instruments would also represent an available funding source. On the other hand, the risk premia for uncovered bonds are largely dependent on the solvency position of the issuer. Differences between guarantee schemes could be responsible for the level of competition and funding cost differentials between banks with regard to issuing new debt, although there was no clear evidence for this at the time of writing (for more details see Box 1).

4.2 DEBT INVESTORS

When looking at bank debt as a funding source, it is important to know who are the actual or potential investors¹³ in such debt securities because different types of investor behave differently under normal conditions, and in particular in times of stress. Thus, a sound diversification in types of investors in own debt can contribute to a more stable demand for the debt instruments. Management of large banks should be very aware that debt investors play a role that is just as important as that of depositors and equity investors.

Basically, debt investors aim to fully redeem the invested capital plus an adequate yield. They pay most attention to the solvency of the company they invest in. Debt investors prefer that a company's earnings are mainly used for reinvestment in order to strengthen risk buffers. At the same time – although their engagement can be on a very large scale – they cannot directly influence decisions, as is the case for equity investors, which usually have voting rights at general meetings.¹⁴ The question of influence is therefore an issue to be considered by banks when weighing the issue of new debt against the issue of new shares.

The group of possible investors in banks' debt is very diverse. At the same time, no overall statistics are available at either the EU or the euro area level on the composition of banks' debt

investors (e.g. at the level of financial accounts). Therefore, in the survey, banks were asked to report on the composition of their respective debt investors with regard to before and after the onset of the financial crisis. They were also asked to distinguish between domestic and foreign debt investors. The replies showed that banks have only very limited information about their debt investors. Less than half of the sample could provide figures on the composition, or at least identify the most important groups, of debt investors before and since the crisis. According to the answers received, banks were the most important group of debt investors before the start of the financial crisis, followed by long-term investors, such as pension funds or insurance groups. The most recent data shows that the situation has remained the same since the onset of the financial crisis. There has, therefore, been no change in the composition, which also means that banks still play the most important role while, at the same time, their willingness to lend money to each other has diminished. This could be problematic for banks when bank debt falls due and has to be refinanced by other funding instruments or other investors, leading them to seek alternatives in the future. Another interesting aspect was the split between domestic and foreign investors. A sub-sample of 14 banks provided adequate data. This sub-sample showed a clear trend towards domestic debt investors after the start of the financial crisis.

Another sub-sample of 15 banks could be analysed in terms of the degree of diversification of their debt investor base. About 40% of them showed a rather diversified debt investor base before the crisis, comprising at least five of the different groups mentioned in the survey, and this situation changed only modestly during the crisis. However, two aspects deserve to

13 In this context, members of this group are considered to be large-scale investors, which must be distinguished from retail debt investors purchasing, for example, certificates or bank bonds on stock markets as part of their depots. Of course, transition might be gradual as private individuals could also act as large-scale debt investors, e.g. within their wealth management strategies.

14 This is true at least for common stock holders. However, there are other types of equity-like preferred shares which do not include voting rights.

be mentioned: first, with regard to hedge funds, some banks¹⁵ noted their decreasing importance as bank debt investors and even deemed this investor type to have no relevance in their forecasts. This is certainly due to the fact that many hedge funds have experienced problems when affected by a large demand for repayment from their own investors; second, among the banks¹⁶ which mentioned sovereign wealth funds as debt investors, the majority of them deemed them to be slightly growing in importance. However, currently their share in the debt investor base is still relatively low.

It can be concluded that it is important for banks to have information on the composition of own debt investors for their funding strategy, as better knowledge can lead to more accurate forecasts of the development of the funding situation.¹⁷ At least half of the banks surveyed demonstrated that improvements are needed in this regard, as they were unable to deliver this kind of important management information¹⁸ on request. However, as bank debt is mostly

tradable on secondary markets, knowledge of the identity of debt investors after first issuance is naturally limited. However, this is not a valid argument with regard to the time of issuance. Nowadays, targeted issuance of debt securities is more and more important and this could favour private placements over open issuances (see Box 2). As institutional investors became more risk-averse, banks have more incentive to attract retail debt investors (in parallel with retail deposit investors) and, in the global playing field, sovereign wealth funds could also play an increased role in terms of debt securities.

15 These were four banks from three EU-15 countries (one medium-sized, three large).

16 These were four banks from three EU-15 countries (one medium-sized, three large). The three large banks are the same as those mentioned in footnote 15 above.

17 For more details, refer to Section 7.

18 Generally, a time limit of at least two weeks was set for all banks in the survey to collect the information. However, owing to the financial crisis and to statements by many of the banks surveyed, the ongoing financial crisis had led to staff restrictions, which meant that they were often only able to give sub-optimal responses to the questions in the survey.

Box 2

BOND MARKETS: A KEY FINANCING TOOL FOR BANKS

This Box reviews the functioning of and recent trends in the primary and secondary markets in respect of bond issuance by banks, as well as the impact of the financial crisis on this market.

The primary market

The primary market is the part of the bond market that deals with the issuance of new securities. Currently, three types of instrument are issued by banks: uncovered non-guaranteed bonds, government-guaranteed bonds and covered bonds.

Uncovered non-guaranteed bonds (e.g. traditional bonds issued by banks in order to fund their long-term financial needs without recourse to collateral) now share the market with a government-guaranteed segment that has appeared since the onset of the financial crisis. Indeed, one of the main consequences of the financial crisis was the rapid slump in confidence, which resulted in a fall in bond issuance.

In order to help banks to secure long-term funding, most governments decided to guarantee new debt securities issued by banks within the scope of national rescue plans, each with its own

specific features (see Annex 1). This has had a positive effect insofar as state-guaranteed bonds have often been several times oversubscribed and have allowed participating banks to raise substantial amounts. Although it remains to be confirmed, state-guaranteed issuance may also have had a positive feedback effect on non-guaranteed bonds: a few banks have succeeded in issuing non-guaranteed bonds since December 2008 (see Box 1).

The bank bond market also includes covered bonds, which involves recourse to a pool of assets that secures or “covers” the bond if the issuing bank becomes insolvent. In recent years, the euro covered bond market has seen rising issuance volumes in several countries. However, it has been severely impacted by the crisis, with a near halt in issuance in the last quarter of 2008. It was reopened very modestly in January 2009 with two jumbo issues by BNP Paribas and Crédit Agricole.

In addition to changes in the type of bond issuance, the financial crisis also seems to have had an impact on the way banks place their bonds. Since the beginning of the crisis, many banks have shifted to private placements and the “book building technique”. The securities are offered directly to a limited number of selected investors. The structure covenants, as well as the price, are negotiated with those investors. This often guarantees better conditions than in the public market and eliminates the risk of undersubscription that arranging banks are no longer willing to assume.

The secondary market

The secondary market is the part of the bond market where previously issued securities are exchanged between investors. Bank and corporate bonds are traditionally less liquid than government bonds and, except for the period shortly after issuance, only jumbo issues (more than €1 billion) trade frequently. However, after September 2008, liquidity conditions deteriorated markedly both on non-guaranteed bonds and on covered bond markets. From mid-September 2008, valuations became scarce and purely indicative because investors were increasingly risk-averse and market-making arrangements were either absent (in contrast to the government bond market) or stopped functioning altogether (e.g. covered bonds). In Europe, the pure over-the-counter nature of the bond market may have further complicated the tracking of transactions.¹

Despite the more difficult conditions prevailing since the crisis started, the bond market remains a key financing tool for banks, by securing funding on long maturities and hence facilitating asset liability management. An orderly restarting of this market – including in its non-guaranteed and covered bond formats – is very closely tied with exit strategies from the crisis and the long-term prospects for bank funding.

¹ Although the US bond market is also OTC, a system called TRACE was created in 2002 that allows for the tracking of transactions, leading to increased transparency.

5 COLLATERAL AND ITS MANAGEMENT

As discussed in Section 2, some action taken by central banks since the beginning of the crisis, namely the modification of eligibility criteria, has had a direct impact on the collateral basis

of European banks. The collateral basis of a credit institution constitutes a key element of its funding and liquidity management strategy. Indeed, in normal circumstances, a strong basis of high quality and liquid collateral can be used to attract funding. However, the maintenance of

a collateral basis is costly for credit institutions, which may thus have an incentive to reduce it. In addition, to be able to optimise their collateral management, credit institutions may have to develop dedicated tools that allow them to track collateral throughout the organisation. This section describes the main changes observed in this area of liquidity management in recent months, in particular, following the failure of Lehman Brothers in mid-September 2008.

5.1 CONSTRAINTS ON COLLATERAL USE

The tightening of conditions in the repo market had already started well before the peak of the crisis from September to October 2008. Indeed, tighter constraints on the type of collateral used in bilateral and tri-party repos could already be observed before the collapse of Lehman Brothers. These tightened conditions resulted from the fact that borrowers were ready to bid cash more aggressively to complement their central bank funding. These constraints translated into a generalised increase in haircuts¹⁹, regardless of seniority, maturity, rating or liquidity of the collateral, which nevertheless had an especially

important effect on illiquid assets and lower credit quality assets (see Table 2).

Following the bankruptcy of Lehman Brothers, conditions in the repo market became even more severe and the range of assets no longer accepted as collateral broadened.²⁰ Initially, this exclusion concerned illiquid assets for which liquidity premia had dramatically increased. Sudden pullbacks were observed as cash lenders became exposed to important liquidity risks and were wary of the difficulties involved in selling their collateral if necessary. Remarkably, the appetite for transactions based on higher quality collateral also decreased, so that, in practice, the only type of collateral still accepted in repo transactions was almost limited to government bonds only. Indeed, according to JP Morgan²¹,

19 Sometimes up to 100%, implying the exclusion of the asset as collateral.

20 See also for example Hördal P. and M. King (2008), "Developments in repo markets during the financial turmoil", BIS Quarterly Review, December, pages 38-53 for a detailed analysis and comparison of the US, euro area and UK repo markets and their dynamics during the crisis.

21 See, for example, JP Morgan Daily Liquidity Update of 19 November 2008.

Table 2 Typical haircut or initial margin

(percentages)

	April 2007	August 2008
US Treasuries	0.25	3
Investment-grade bonds	0-3	8-12
High-yield bonds	10-15	25-40
Equities	15	20
Investment-grade corporate CDS	1	5
Senior leveraged loans	10-12	15-20
Mezzanine leveraged loans	18-25	35+
ABSs CDOs: AAA	2-4	95*)
AA	4-7	95*)
A	8-15	95*)
BBB	10-20	95*)
Equity	50	100*)
AAA CLO	4	10-20
Prime MBS	2-4	10-20
ABSs	3-5	50-60

Sources: Global Financial Stability Report, IMF, October 2008. Citigroup; Morgan Stanley Prime Brokerage; and IMF staff estimates. Notes: ABS: asset-backed security; CDO: collateralised debt obligation; MBS: mortgage-backed security; RMBS: residential mortgage-backed security; *) Theoretical haircuts as CDOs are no longer accepted as collateral.

Table 3 Summary statistics on constraints on collateral in interbank operations

(percentages)

	Did your institution experience constraints for a specific type of collateral?			Number of banks which mentioned an increase in haircuts
	Yes	No (or not active)	No answer	
Central government debt instruments	19.4	52.8	27.8	2.8
Local and regional government debt instruments	22.2	36.1	41.7	5.6
Jumbo and traditional covered bank bonds	27.8	30.6	41.7	13.9
Agency debt instruments	19.4	38.9	41.7	13.9
Supranational debt instruments	16.7	41.7	41.7	11.1
Credit institution debt instruments	27.8	27.8	44.4	22.2
Debt instruments issued by corporate and other issuers	33.3	25.0	41.7	27.8
Asset-backed securities	33.3	27.8	38.9	25.0

Source: BSC survey.
Note: Percentage of total surveyed banks.

volumes in the government repo market increased substantially immediately after Lehman Brothers' failure. Since then, the volumes in this market have remained steady in Europe. On the other hand, in the euro credit repo market, volumes remained low and, in mid-November 2008, they were 80-90% below the levels prior to Lehman Brothers' bankruptcy. Table 3 presents summary statistics on the number of banks which, according to the BSC questionnaire, have experienced additional constraints on their collateral in interbank operations since the beginning of the crisis. Note that the fact some banks did not experience constraints on a particular type of collateral may be due to the composition of the sample, which comprises banks that are not active in all collateral segments.

The results showed that, in parallel with the exclusion of some assets as collateral, some counterparties have also been excluded. The events related to Bear Stearns, followed by Lehman Brothers' bankruptcy, have increased the perception of counterparty credit risk in repo markets. Despite the fact that the lending of funds is collateralised, some cash lenders have been reluctant to lend funds to a counterparty that they consider, rightly or not, as weaker. Actually, the short maturity that characterises the repo market allows the cash lender to rapidly use

initial margins and higher haircuts to exclude a counterparty from the market, regardless of the quality of the assets given as collateral. Lower rated banks, as well as banks facing temporary difficulties, have found it increasingly difficult to finance themselves, even on the repo market. The importance given to counterparty risk in transactions may explain why anonymous trades on Eurepo through electronic trading systems were very limited in number, as well as in terms of amount per transaction.

Similar constraints were also observed in derivative markets, as the management of the collateral basis also plays a crucial role in these markets. Indeed, exposures on derivative markets are collateralised thanks to the maintenance of a margin. This collateralisation allows credit institutions to minimise their counterparty risk. When the margin posted in the margin account is below the minimal margin requirements, additional collateral is called (margin call). Margin calls are thus inversely related to the nominal value of the collateral. In recent months, the decrease in the value of collateral, combined with the increase in haircuts, has triggered additional margin calls that may have been challenging to meet for some credit institutions. A magnifying effect may, in addition, have affected institutions that faced a downgrade and, as a consequence, had to simultaneously

meet additional margin requirements. All of these elements combined have placed additional strains on collateral management.

5.2 CENTRAL BANKS' RESPONSES ON COLLATERAL

Through their interventions, central banks in Europe have aimed to alleviate potential funding shortages of credit institutions, following the major disruptions that occurred in financial markets. In this context, part of their action was focused on banks' collateral management. Indeed, given the constraints on the type of collateral accepted in the repo markets, and the resulting need to mobilise higher quality collateral in transactions with private counterparties in financial markets, some central banks have put in place mechanisms to swap illiquid for liquid collateral.²² In addition, some central banks have substantially extended their list of eligible collateral. These are generally subject to additional haircuts and their use is closely monitored to avoid abuses. This type of extension is illustrated in Box 3, which summarises the successive changes in the Eurosystem collateral framework.

Further, in order to foster the recovery of the interbank market, one central bank²³ has designed a trading scheme to offer participants, alongside the existing types of contract, the possibility of carrying out trades in euro anonymously and with protection from credit risk. The anonymity of

bilateral contracts is made possible by the role performed by the central bank, which evaluates the collateral provided by the participating banks, provides prompt settlement of transactions if a party to a contract defaults and proceeds to realise the collateral, ensuring the performance of contracts.²⁴

The difficulties experienced on money markets have highlighted the exceptional role played by central banks in financial intermediation during a crisis. In reality, central banks have increasingly acted as deposit-taker and cash lender, as credit institutions have substituted their money market activities with central banks. The recent increases in central banks' balance sheets, as well as in the risks taken, are two consequences of this substitution.

22 This is, for example, the objective of the Special Liquidity Scheme set up by the Bank of England through which credit institutions can temporarily swap some of their high quality mortgage-backed and other securities for UK Treasury Bills.

23 The Banca d'Italia, together with the Italian Banking Association and e-MID SIM. See Banca d'Italia, *Economic Bulletin*, January 2009.

24 The scheme envisages a partial mutual sharing of default risk: where the collateral provided is insufficient, the other market participants jointly make up the difference within the limit of 10% of the collateral contributed at the time of their accession to the new market segment. The new market segment is scheduled to remain operational until 31 December 2009, but its life could be extended should market conditions warrant. The collateralised market is reserved for Italian banks. In the future, it may be extended to EU credit institutions that satisfy requirements similar to those established for Italian participants, subject to an understanding with their home country authorities.

Box 3

CHANGES TO THE EUROSISTEM COLLATERAL FRAMEWORK

In the wake of the autumn 2008 bout of market disruption, on 15 October 2008 the Governing Council of the Eurosystem announced the temporary expansion of assets eligible as collateral in Eurosystem credit operations until the end of 2009, highlighting that the expansion of the eligibility criteria was to be combined with vigilant monitoring of the use of the framework. The date of entry into effect as well as further technical details on these measures were communicated in the course of October and November 2008. These extensions reflect both the widening of the eligibility criteria, as well as the recognition of new types of eligible assets.

Rating criteria

As of 22 October 2008, the credit threshold for marketable and non-marketable assets was lowered from “A-” to “BBB-”¹, with the exception of asset-backed securities (ABSs), for which the credit quality threshold of “A-” remained into force. A haircut add-on of 5% is applied to all assets rated below “A-”. Instruments with a rating in Step 3 of the Eurosystem harmonised credit quality rating scale are thus temporarily accepted.

Seniority criteria

Also as of 22 October 2008, the Eurosystem accepts in its credit operations subordinated marketable debt instruments, otherwise fulfilling all other eligibility criteria, protected by an acceptable guarantee as specified in Section 6.3.2 of the General Documentation. A haircut add-on of 10% and a further 5% valuation markdown in case of theoretical valuation are applied in such cases.

New types of assets

Eligible assets now include: (i) debt instruments issued by credit institutions, including certificates of deposits, which are traded on certain non-regulated markets as specified by the ECB and which fulfil all other eligibility criteria, with a 5% haircut add-on being applicable (as of 22 October 2008); and (ii) marketable debt instruments denominated in some currencies other than the euro (namely US dollar, pound sterling or Japanese yen), provided that they are issued and held/settled in the euro area, the issuer is established in the European Economic Area and all other eligibility criteria are fulfilled (as of 12 November 2008). These instruments are subject to a uniform haircut add-on of 8%, with haircut add-ons being applicable cumulatively.²

In contrast to this expansion of the type of eligible assets, for ABSs issued as of 1 March 2009, the underlying pool should not consist, in whole or in part, of tranches of other ABSs. ABSs issued before 1 March 2009 will be exempt from this requirement until 1 March 2010.

Restrictions on the use of uncovered bank bonds

As of 1 March 2009, the value assigned to uncovered bank bonds issued by an issuer, or any entity with which this issuer has close links as defined in Chapter 6.2.3 of the General Documentation, must – unless guaranteed by a public sector entity with the right to levy taxes – be less than a share of 10% in the value of the collateral pool of a counterparty, unless the market value of the assets referred to above does not exceed €50 million.

1 The Eurosystem considers a probability of default (PD) over a one-year horizon of 0.40% as equivalent to the “BBB-” credit assessment.

2 For example, a marketable debt instrument denominated in a foreign currency and rated below A- will be subject to a total haircut add-on of 13% (8% due to the denomination in a foreign currency and 5% due to the rating below A-).

5.3 RESPONSES IN THE WAY BANKS MANAGE THEIR COLLATERAL

The flight to quality and liquidity that led to disruptions on repo markets has exerted some pressures on collateral management and risk assessment by banks. Therefore, while prior to the crisis banks used to consider that being able to track and manage collateral on a global basis was important, they now view this risk management function as essential²⁵, especially as collateral mobilised by transactions on the market can quickly lose its liquidity value and require substitution by higher quality collateral.

In this context, banks have also shown a marked interest in the expansion of the list of eligible collateral as it allows them to reserve their highest quality collateral for repo transactions on markets, as well as for margin calls, and at the same time maximise the use of collateral in central banks' credit operations. Therefore, banks have attached growing importance to the eligibility criteria, as shown by the replies to the BSC questionnaire.²⁶

The increasing levels of central bank funding have also had operational implications. Indeed,

several banks indicated that they have tested the procedures put in place by central banks (including the ECB, Federal Reserve and Bank of England) to access funding as part of their contingency plan. Moreover, the possibility to use non-marketable assets, such as loans to non-rated firms, as collateral in central bank operations, may have created additional incentives for some banks to see their internal ratings systems assessed by their central bank²⁷ (the "Internal Ratings-Based Approach", recognised in Basel II to calculate capital requirements to cover credit risk).

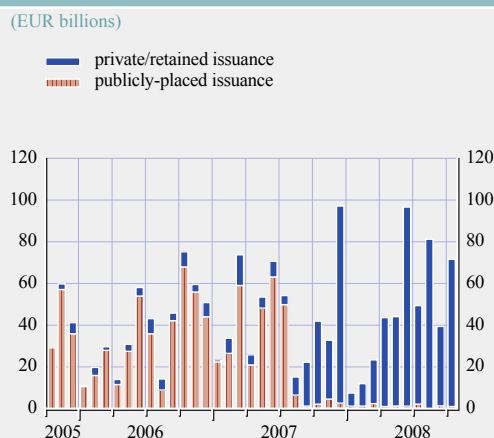
In order to increase their collateral basis, some banks have also been securitising their loan

25 Some 23 banks have, for example, indicated that they have changed the way in which they manage their collateral since the beginning of the crisis. For instance, some anecdotal evidence shows that, in the light of recent events, some banks have accelerated their IT investments to further develop their ability to manage their collateral basis.

26 The responses to the BSC questionnaire indicate for instance that the eligibility of assets has become one of the criteria considered in an investment decision.

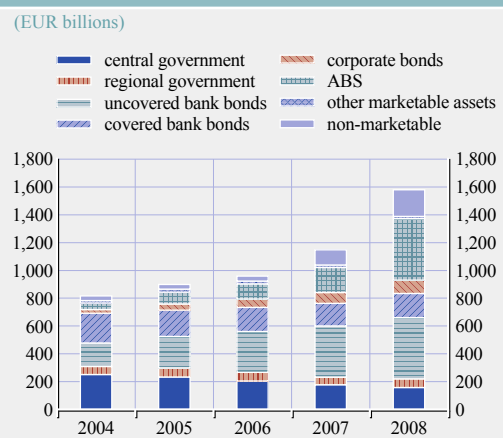
27 A precondition for an IRB system to be accepted for the Eurosystem credit assessment framework (ECAAF) is that it must be recognised by the relevant EU-established supervisory authority under the Capital Requirements Directive (see section 6.3 of the "General Documentation on Eurosystem monetary policy instruments and procedures" under <http://www.ecb.europa.eu/pub/pdf/other/gendoc2008en.pdf>).

Chart 15 Securitisation issuance in Europe by month: public versus non-public issuance



Source: Citi.

Chart 16 Composition of collateral posted or used for Eurosystem credit operations expressed as a share of total (yearly averages)



Source: ECB.

portfolios for the sole purpose of using the securitised tranches for ECB collateral.²⁸ For instance, Chart 15 shows that since the beginning of the turmoil, most issuance of securitised products are private/retained issuances and are no longer intended to be publicly placed. In addition, central banks have also observed an increased use of ABSs and uncovered bank bonds in central banks operations, as is the case of the Eurosystem (see Chart 16).

Finally, the current crisis may also have forced some banks to increase the centralisation of their collateral management. Indeed, collateral management, as part of the liquidity management strategy of a credit institution, can also be more or less centralised or decentralised. In order to optimise collateral and liquidity flows between different entities on a cross-border basis, some credit institutions may have increased the degree of centralisation of their collateral management. This trend may have increased the importance of the parent company in collateral management relative to before the crisis.

However, this trend towards centralisation may have been counterbalanced, in certain cases, by the domestic approach to crisis management followed by certain states. Measures devised exclusively for domestic banks in certain countries may have given an advantage over local subsidiaries of non-domestic banks. In countries where rescue plans set up by the authorities were focused on domestic banks, these local entities may have seen an increase in their importance.

6 INTERNAL TRANSFER PRICING

The mis-pricing of risk (and liquidity risk in particular) is considered to be one of the main causes of the financial crisis. Before the crisis, liquidity was abundant and its price was underestimated. The crisis revealed that banks used to manage liquidity without the appropriate risk management both towards their customers (external liquidity pricing) and towards their business units (internal liquidity pricing)

(see Annex 2). Therefore, mainly as a result of the crisis, the internal transfer pricing of banks has become of paramount importance. As such, this issue is currently under discussion in various international fora (see Annex 3 for discussions by the Basel Committee, Senior Supervisors Group, Committee of European Banking Supervisors and Institute of International Finance).

Internal transfer pricing refers to the liquidity invoicing policy by the Treasury Department²⁹ of a financial institution to its business units. It is a major parameter of the day-to-day and long-term liquidity management of the bank and has to be determined by respecting some guiding theoretical parameters. This issue also has a larger dimension: it can refer to the liquidity invoicing by a banking group to its branches abroad. Section 6 focuses on the internal pricing of liquidity and its different business units within the parent bank.

6.1 THE MAIN PARAMETERS OF AN INTERNAL PRICING SYSTEM

Internal transfer pricing plays a part in profit allocation within the bank and can indirectly influence business units' activities and appetite for risk: if funding costs are too cheap internally, business units have an incentive to adopt less risk-averse behaviour by increasing their leverage and maximising volumes; if internal funding costs are too high, business units become risk-averse and limit their activity. Because its role is strategic, internal transfer pricing – mostly implemented once a year by the Treasurer or AL manager of the bank – has to reflect the economic reality of the operations that have to be funded.³⁰ Banks surveyed by the

28 This trend could already be observed before the failure of Lehman Brothers. See, for example J.M. González-Páramo (2008), "Financial turmoil, securitisation and liquidity", speech at the Global ABS Conference 2008.

29 Depending on the internal organisation of banks, internal transfer pricing can also sometimes be defined and implemented by the ALM Department.

30 See Adam, Alexandre (2007) "Handbook of asset and liability management: From models to optimal return strategies". Adam describes the internal transfer price as the "fictitious price of the fictitious micro hedging of this operation on the market".

BSC explained that they more often base their internal pricing on market prices plus liquidity add-on. In order to measure this variable part, it is necessary to take account of the following parameters.

First, the internal transfer price should take into account the maturity of the transaction: for a traditional yield curve, the cost should increase with the maturity of the transaction.

Second, it should vary with the risk profile of the business unit. Traditionally, investment banks fund themselves at a premium in the market compared with commercial banks. Therefore, for universal banks conducting a myriad of activities (retail bank, investment bank, specialised lending), internal pricing of funds has to reflect these differences in risk profiles (own characteristics of the different operations).

For instance, in order to encourage business units to attract more deposits, it can be interesting to measure and integrate the net contribution of the business unit to the bank's funding position. This would imply that those business units generating deposits fund at a lower net cost than those not generating deposits.

Finally, implementing a rigorous and safe internal pricing policy implies that the Treasurer/ALM manager has to assess and to invoice the interest, liquidity, credit, country and exchange risks. It is important to know whether the interest rate applied to the client is fixed or indexed and, in that case, to know the index type in order to index the internal transfer price as well. It can be measured either via the swap curve (i.e. Libor or Euribor rates and swap rates) or via the sovereign curve (i.e. bonds, bills). Moreover, the quality and liquidity of the assets and their central bank eligibility should be studied to determine the internal transfer price. The credit risk cost can be indexed over the swap rate or over the risk free rate. Moreover, because a loan can include explicit or implicit commitments, these should be included in the transfer price. For example, if a loan is callable, this provides an option to the borrower to redeem the loan at

pre-specified time windows. This option has to be priced and incorporated in the internal funding cost of the loan. The same applies to other contingent commitments (e.g. revolvers, liquidity lines, calls and puts).³¹ Finally, the country risk must be taken into account for banks with subsidiaries abroad, the internal transfer price increasing with the country risk.

6.2 SHORTCOMINGS IN BANKS' INTERNAL TRANSFER PRICING POLICIES

One of the major characteristics of the current crisis was a very abrupt change in the cost and availability of liquidity on most markets, which has had an impact on the cost of internal liquidity for business units. This tightening of funding conditions exposed a number of shortcomings in banks' internal funding policies, which were insignificant in an abundant liquidity environment, but became unsustainable in the new environment.³²

TRADING ACTIVITIES

For example, trading activities benefited from a special position in terms of funding. Unlike other business units, the trading unit generally has direct access to the interbank market and is not required to go to the ALM desk to match every transaction. As a result, significant information asymmetries exist between the trading desk and the ALM department. In addition, in contrast to retail units which fund illiquid term loans, the trading desk funds marketable instruments, such as bonds, on which a liquidity assumption has to be made. Therefore,

31 It is often complicated to assign a price to these secondary commitments insofar as options may cause arbitrage opportunities for the business unit. Indeed, as the optional cost is included in the internal transfer price and therefore transferred to the ALM, the business unit is not encouraged to limit the exercise of the options. One of the solutions is to make the business unit sensitive to the implicit optional cost.

32 The case of UBS is enlightening: in a detailed report to shareholders in April 2008, UBS took an inventory of the main causes of the losses and writedowns: weaknesses in risk assessment and risk control, dysfunction in methods of valuation of assets, overoptimistic audit process and inappropriate asset-liabilities management. Focusing on the internal transfer pricing, the report shows that the principles and methods used by the parent bank contributed to increasing the sub-prime exposures of the bank.

some trading desks were funding long-term transactions, such as Negative Basis Trades, by overnight funding³³, without declaring it to the ALM desk. The assumption behind this was that the trade could be unwound rapidly if need be, something which became impossible once the turmoil had started. Other trading desks were benefiting from very cheap funding – sometimes below market rates – from the Treasury desk, and hence undertook transactions that ended up being grossly unprofitable. In essence, those desks were cross-subsidised by the bank’s other activities. Finally, some trading desks – sometimes in agreement with their ALM department – overestimated the liquidity of some bonds or structured instruments in the markets, which were matched to short maturity buckets (a few days) within the ALM framework, when it actually took several weeks or months to liquidate these positions in stressed markets.

CONTINGENT LIQUIDITY LINES

In addition, before the crisis, banks provided backstop credit lines to off-balance sheet vehicles, but this “contingent guarantee” was priced neither to the clients nor internally by the ALM desk. Yet, there was a risk of drawings of those lines, which is what finally occurred.

COMPETITION PRESSURES

Finally, as competition to gain market share in lending activities was intense, internal pricing of liquidity for some retail or specialised lending activities was sometimes underestimated so as not to penalise them compared to competitors. This policy became unsustainable after the crisis.

6.3 NEED FOR RULES RELATIVE TO INTERNAL TRANSFER PRICING POLICY

Most of the banks surveyed by the BSC recognised that before the peak of the crisis in September 2008, they had been applying internal prices within the bank which did not reflect the real price of funding. They also explained that they are now trying to review their rules on internal transfer pricing (and are at different stages in this process) with two

objectives: first, to put an end to inappropriate practices which create new sources of risk; and, second, to conform to the current market reality, notably by taking into account the increase in funding costs and passing this on to the relevant business units.

RESPONSIBILITY FOR DECISIONS ON GROUP INTERNAL LENDING

A few banks changed the way in which they take decisions about internal transfer pricing either by assigning responsibility for decisions to a higher management level (for example, executive board level) or by holding more frequent meetings (weekly rather than quarterly).

INCREASE IN THE INTERNAL TRANSFER PRICING

The majority of banks interviewed have increased their internal funding prices. They have done so according to various criteria: the most commonly applied criteria is the type of funding, followed by the location of subsidiaries and the nature of business lines respectively and, finally, sometimes the type of internal counterparty.

For some banks, these changes apply to all divisions, while for other banks, they differ according to division. For example, in some banks, business lines generating deposits (e.g. retail banking) have been offered a lower cost of funding than those which do not generate deposits. Others banks are in the process of including an additional charge that reflects the intrinsic credit risk of each subsidiary based upon its standalone basis funding cost. In addition, some isolated replies revealed that the cost of funding increased more for the corporate network than for the retail network; there was a larger increase in the cost of funding for retail banking inside the country than for retail banking outside the country (partly owing to regulation); and that the transfer pricing model had led offices to pay more for their internal lending, but also to receive more interest for their long-term deposits.

³³ See Risk Magazine (December 2007) “A question of funding”, pages 34-36.

REVIEW OF KEY PARAMETERS OF THE INTERNAL TRANSFER PRICING

Overall, around one bank out of three said that they had changed the list of criteria they applied for internal transfer pricing compared with the pre-crisis situation. They are now trying to reflect more precisely:

- the market conditions: the internal transfer price is computed using market prices (Euribor is often used for funding up to one year and a reference funding cost curve can be used for funding above one year). For one bank, internal pricing is a proxy of marginal cost of market funding for the bank in different time buckets (“up to one year”, “up to three years”, “above three years”);
- the maturity of deals: maturity, repayment schedule;
- the currency of deals;
- the country risk: pricing depends on the location of the intra-group borrower;
- the liquidity risk: assessment of the nature, the liquidity and the central bank eligibility of the assets; and
- the secured or unsecured nature of the funding.

Some banks already had sophisticated systems that could serve as benchmarks. For instance, one major bank interviewed was already implementing the following high quality internal transfer pricing system. A “liquidity pool” is located between the Treasury (responsible for the operating liquidity, the daily clearing of the liquidity pool and the trading portfolio), the business units (granting loans, collecting deposits, addressing the liquidity pool for their funding needs and putting their liquidity excess) and the financial management (dealing repos with central banks and money markets, and acquiring securities on markets). It had also developed an internal rating of

business units, allowing rational discrimination between the business units and avoiding discretionary decisions (linked with competitive pressures, fringe benefits such as underwriting, M&A, etc.).

7 THE FUTURE OF FUNDING MARKETS – POTENTIAL ISSUES AND HURDLES AHEAD

The preceding sections have taken an in-depth look at the impact of the financial crisis on various aspects of funding, ranging from collateral to internal pricing, and have also analysed how banks have attempted to respond. The crisis has made it clear that liquidity has a cost, which should be adequately priced by financial institutions, both externally (funding liquidity: how easy the bank funds its position, and market liquidity: the ability to sell assets with immediacy at fair value) and internally (between business units of the same financial group).

This final section looks at the immediate challenges for banks’ funding, discusses the government measures aiming at restarting funding markets and presents the views of banks concerning how and when markets might restart as well as the impact of the current situation to the macroeconomy.

7.1 IMMEDIATE CHALLENGES

The BSC is of the view that banks restricted funding activities have somewhat entailed a reshaping of the banking industry, with some business models coming under particular pressure – namely those based solely on wholesale sources and business structures relying mainly on retail secured lending or specialised lending activities.

The BSC has identified two immediate challenges to the way banks are responding to the drying-up of funding sources: the first concerns the current focus on increasing retail deposits as a source of funding; the second relates to how banks monitor their debt investor base.

USING RETAIL DEPOSITS TO STRENGTHEN BANKS' FUNDING STRUCTURES³⁴

Over the past year, banks which formerly relied heavily on wholesale funding have been attempting to re-balance their funding structure towards more retail-based funding. Whilst this is generally viewed as more stable than wholesale funding – in that it is perhaps less likely to dry up quickly – there are some challenges and pitfalls associated with this.

First, there may be limited scope for raising funds via this route, as some EU countries have seen very low levels of savings over the past few years (although there may be scope for EU banks to seek funding from sources abroad).

Second, the increased competition for funds over the past year is leading banks to increase rates paid out to customers on deposits and savings products. To the extent that banks do not pass on these increased funding costs to their lending customers, net interest margins will be eroded.

Finally, whilst retail funding is viewed generally as more “sticky” than wholesale sources of funding, even a bank which is 100% funded by deposits is not shielded from a run if these funds are at call. Put differently, regardless of the source of funding, if the maturity of this funding is very short or at call, then the institution will not be protected from a sudden outflow of funds.

So, whilst raising the level of retail deposits is beneficial to some degree, it will not shield a bank from the risk it takes in its maturity transformation role. To a large extent, this is intrinsic to the bank's primary function as financial intermediary and removing this risk would amount to the bank not serving its purpose within the financial system. But maturity risk can be mitigated through lengthening the maturity of funding where possible, regardless of the type of funding.

More fundamentally though, the only real way for a bank to avoid a wholesale or retail run is

to ensure that the quality of the asset side of its balance sheet is sufficiently high to ensure continued investor confidence, even in times of stress. Increasing retail sources of funding will not in itself act as a substitute for sensible lending policies. Trust in the bank's governance and risk management are also essential. In that respect, the poor implementation of governance structures, which has played a role in shaping the current crisis, should be the subject of a critical review. Whilst deposit guarantee schemes should, in principle, stop bank runs, there is no guarantee that they would really do so.³⁵

IMPROVING OWN KNOWLEDGE OF BANKS' DEBT INVESTOR BASE

Banks have long monitored their equity investor base because shareholders own the bank and, as such, can put pressure on the bank to act on specific issues. Equity holders have the obvious leverage of being able to sell the bank's shares and thus reduce the value of the firm's market capitalisation should they come to disapprove of its management.

In recent years, banks have also started to develop a better monitoring of their debt investor base. However, it was apparent from the questionnaire responses submitted to the BSC that only a minority of banks³⁶ were able to quantify, even broadly, the mix of investors in their primary debt issuance.

To some degree, banks' limited knowledge about their debt investors is the direct result of operating in an environment of dis-intermediated markets: ultimately, it is not possible for them to know who holds their debt. But the BSC suggests that it is possible for banks to improve their knowledge and monitoring of their primary

³⁴ Most of the subsidiaries in some new Member States relied, to a great extent, on retail deposits as a source of funding, rather than on the wholesale funding markets.

³⁵ For example, depositors may remain concerned about the speed of pay-off under the guarantee scheme and still prefer to take out their savings from a bank that is viewed as being at risk of failing.

³⁶ A total of 15 (nine medium-sized and six large banks) out of the 36 surveyed banks provided figures or some qualitative assessment on their debt investor base.

issuance investor base, and that this has become particularly relevant today.

There are three reasons why banks might want to improve their monitoring:

- First, because gaining a better knowledge of their debt investors would enable banks to develop better relationships with their largest counterparties, the actions of which could be key in starting or avoiding a run should the bank start experiencing funding outflows. Indeed, the removal of funding lines from large counterparties can be a key trigger of bank runs. Whilst banks maintain close relationships with interbank market counterparties, so far they have been less likely to cultivate such relationships with their debt investors.
- Second, holders of bank debt may themselves come under funding pressure in market-wide stress events, which become increasingly likely the longer such a stress event lasts. Understanding the main drivers of such counterparties' behaviour could help banks to anticipate pressures on their own debt funding. Money market funds have provided a striking example of this in the current crisis: following the failure of Lehman Brothers, some funds either experienced large withdrawals after markets were struck by a general "flight to quality" reaction, or they wanted to ensure they were prepared for the likelihood of these occurring. Thus, they reduced the maturity of their lending to banks very significantly. Being able to anticipate this type of feedback to their own funding would help banks better manage their forward-looking liquidity position.
- Third, the current crisis has also shown that it could be useful for banks to be aware of the geographical spread of their investors, especially as a "home bias" tends to reappear during times of crisis. Indeed, domestic investors have appeared to be less "flighty" than those from abroad in the past

few months, perhaps partly because they are more aware of the particular features of each of their local banks. This phenomenon poses an additional risk in the new EU Member States in central and eastern Europe, where high credit growth, together with substantial foreign exchange lending, have tended to give rise to a dependence on foreign funding. In the current environment, it is therefore important that parent banks show commitment to their subsidiaries. While parent banks have shown such support in the first phase of the turmoil, it remains to be assessed whether this support will continue as the crisis deepens further. It is important to emphasise that potential problems at subsidiaries can have a negative effect on the valuation of the banking group. Therefore keeping up the commitment could be beneficial for parent banks and home countries as well.

From an individual institution's point of view, closer ties with its investor base are important because when market liquidity is scarce this allows for a better targeting of fund raising efforts. There are also implications from a systemic point of view: indeed, if a financial institution were to fail, it is important for regulators and policy makers to know beforehand which funding counterparties would be affected, because some of them are key participants in the financial system.

7.2 RESTARTING FUNDING MARKETS

THE PITFALLS OF GOVERNMENT-GUARANTEED FUNDING

As examined in Section 3 of this report, a large number of governments have attempted to restart issuance of bank debt via the application of a state guarantee. However, whilst this provides immediate relief for banks as their main funding markets remain closed, there are a number of concerns surrounding the growing reliance of banks on this type of funding.

In a sense, government-guaranteed funding represents both too little and too much: too

little, because it cannot cover all EU banks' funding needs over the medium term, and too much, because ultimately markets can only be deemed to have reopened when private investor confidence has returned in some form.

Initially, the application of a state guarantee to some banks' issuance was perceived as providing the institution with a "shadow guarantee" on the rest of its debt. As such, some participants indicated that they prefer to invest in non-guaranteed issuance as they would rather pick up the extra yield than invest in debt subject to a (sometimes rather expensive) government fee. It was therefore hoped that state guarantees would generally act as a positive externality on participating banks' funding needs. However, appetite for this shadow guarantee does not yet appear to have materialised to a large extent.

Instead, market contacts have highlighted the apparent segmentation of the investor base between secured and unsecured issues: traditional investors in banks' debt are "credit" investors, i.e. they are investors which specialise in taking on and managing the credit risk of various corporates. This differentiates them from investors in government debt ("rates" investors), which are not interested in gaining exposure to name-specific credit risk, but rather want to gain exposure to the general level of interest rates. Issuance under government guarantee schemes could fall under either category, because the fact that it is issued by a specific bank makes it a "credit" product, but the existence of the government backing encourages comparisons with government or agency debt – "rates" investments.

Indications so far are that government-backed debt is being purchased by rates investors, not credit investors. This segmentation matters because the investor base for guaranteed issuance is therefore separate from that of non-guaranteed issuance – with limited crossover likely. In the short term, this can be viewed positively, as it ensures that a stable investor base is available for banks' funding (e.g. central

banks), and the market segmentation insures that non-guaranteed issuance is not being crowded out by guaranteed issuance. However, in the longer term, the demand which currently exists for guaranteed issuance is unlikely to switch to non-guaranteed issuance if/when this restarts, and therefore guaranteed issuance does not appear to help banks onto a transition path back to "normal" conditions for their debt issuance activity.

This leaves the question of what, then, might encourage markets to restart?

BANKS' VIEWS ON HOW AND WHEN MARKETS MIGHT RESTART

The questionnaire responses received indicate that government support for bank issuance cannot replace the key ingredient of smooth functioning markets – investor confidence.

Very tentatively, responses indicate that debt markets may reopen first (provided the positive externality from state guarantees occurs), followed by secured markets. Interbank markets may reopen last. A number of respondent banks did not attempt to answer this part of the questionnaire, but those that did highlighted the simple fact that banks' balance sheets need to be freed up of bad assets before investor confidence can return.

On the whole, it is somewhat difficult to gain any clear idea of respondents' views on this topic. To some extent, the scarcity of responses also simply reflects the great uncertainty in which financial institutions are currently operating.

With regard to restarting securitisation and covered bond markets more specifically, while simple and transparent secured structures were viewed as essential going forward, restoring liquidity in those markets was also viewed as vital. This points to a solution along the lines of the US-designed TALF³⁷, which enables investors to buy securities which meet their credit risk appetite, while giving them the option

37 TALF: Term Asset-Backed Securities Loan Facility.

to repo these securities should they be unable to find a buyer, thus helping to restore liquidity in the markets.

NEGATIVE FEEDBACK LOOP TO THE MACROECONOMY

The drying-up of funding markets has constrained the ability of banks to offer credit to their customers. Ultimately, this might result in an increased likelihood of default by both retail and corporate customers.

As the credit quality of their customer base deteriorates, banks could see the quality of their own assets deteriorate as arrears increase. So the restriction in bank's funding ability could well feed on itself through the deterioration in banks' asset quality.

In addition, the closure of funding markets could impact on the macroeconomic environment through its impact on consumer and corporate confidence, were this to contribute to a slowdown in consumption or investment.

ANNEXES

I COSTS, LIMITS AND TIME HORIZONS OF GOVERNMENT BANK DEBT GUARANTEE SCHEMES, AND AMOUNTS ISSUED

Country	Costs	Guarantee limit (in EUR ¹⁾ billions) ²⁾	Amounts issued (in EUR ¹⁾ billions)	Time horizon
BE	Maturities below one year: 50 basis points; maturities above one year: 50 basis points + five-year CDS rates 1 Jan. 2007-31 Aug. 2008	to be determined on a bank-by-bank basis by the government	Currently +/- 3	Until 31 October 2009, covering new issues of up to three years
DE	Maturities below one year: 50 basis points; maturities above one year: 50 basis points + bank-specific premium correlated with five-year CDS rates 1 Jan. 2007-31 Aug. 2008; there is also a 10 basis point commitment commission for the undrawn part of the guarantee.	400	Not available	Until December 2009; maturities of up to three years; in exceptional cases and for a maximum amount of one third of total guarantees: maturities over three years up to a maximum of five years.
DK	Banks will contribute up to DKK 35 billion over two years	Unlimited	6.4	Initially until 30 September 2010 (the guarantee has since been extended to 2013)
GR	The costs (commission) depend on duration an availability of collateral, i.e. 25 basis points for a guarantee between 3 and 12 months with collateral and 50 basis points without collateral. For longer maturities, an additional fee based on bank CDS spreads is charged	15	1.0	Up until Dec 2009; maturities of up to three years
ES	For issues maturing in less than one year, the commission is 50 basis points. For issues maturing after a year, the commission is equal to 50 basis points over the median of the issuing bank's 5-year CDS between 1 January 2007 and 31 August 2008 or the median within the same rating category issuing bank's 5-year CDS between 1 January 2007 and 31 August 2008, whatever the lower. The median for AA institutions is 0,365% annual and for A institutions 0,448% annual. When no CDS data were available the second calculation will apply when the institution is rated. For the rest of issuers the reference, in addition to the 50 basis points, will be the 0,448% annual plus an additional 0,10% annual.	100	16.2	Until December 2009; maturities of up to three years (five years in exceptional cases)
FR	Cost of issuance for the Société de Financement de l'Economie Française (SFEF) ³⁾ (~ cost of public debt + α basis points) + median of CDS rates between 1 January 2007 and 31 August 2008 + 20 basis points	265	39.0	Until December 2009; maturities of up to five years

Sources: Official government publications and press releases.

Note: The cut-off date for this information was end of March 2009.

1) Or other currency as indicated.

2) Limit on guaranteed amounts as laid down by law.

3) The SFEF is a special entity granting loans to banks and funding itself by issuing state guaranteed bonds on markets.

Country	Costs	Guarantee limit (in EUR ¹⁾ billions) ²⁾	Amounts issued (in EUR ¹⁾ billions)	Time horizon
IE	Fee equal to ca. €0.5 billion per year for the two years (i.e. until 29 Sept. 2010)	Unlimited ³⁾	9.3	The Guarantee scheme extends to deposits, interbank deposits, senior unsecured debt, covered bonds, including asset covered securities, and subordinated debt. The covered liabilities of covered institutions are guaranteed under law until 29 September 2010.
IT	The state guarantees carry a fixed cost (.50 basis points) for transactions with a maturity of up to one year; for transactions with a longer maturity, the cost reflects the issuer risk, derived from the spread on five-year credit default swaps.	Not announced	0.0	Until December 2009; for issued debt with a residual maturity of between three months and five years
LV	Remuneration for the provision of guarantees consists of a credit risk margin based on five-year CDS spreads of largest euro area banks with rating A -0.448%, a processing fee -0.5% and an annual servicing fee -0.1%	Max. 10% GDP	0.0	Until 31 December 2009; covering existing debt with residual maturity of no more than three years, as well as new debt with maturity of no less than six months and no more than three years, which is issued for refinancing of existing debt.
HU	Costs will be determined following the recommendations and communications of the ECB and the European Commission.	HUF 300	HUF 0.0	Until December 2009; maturities of up to five years
NL	Maturities of below one year: 50 basis points; maturities above one year: 50 basis points + five-year CDS rates 1 Jan. 2007-31 Aug. 2008, CDS spread AAA 23 basis points, AA 38 basis points, A 43 basis points, others 63 basis points	200	16.0	Until December 2009; maturities of between three months and five years
AT	Maturities below one year: 50 basis points; maturities above one year: 50 basis points + five-year CDS rates 1 Jan. 2007-31 Aug. 2008	75	10.9	Until December 2009; state-guaranteed debt can have a maturity of between two and five years
PT	Maturities below one year: 50 basis points; maturities above one year: 50 basis points + five-year CDS rates 1 Jan. 2007-31 Aug. 2008	20	4.6	Until December 2009; maturities of up to three years (five years in exceptional cases)
SI	Maturities from three months to one year: 50 basis points; maturities above one year: 50 basis points + 25 basis points (AAA long-term rating of Standard and Poor's, FitchRatings or Moody's) or 40 basis points (AA rating) or 45 basis points (A rating) or 50 basis points (BBB rating) or 55 basis points (BB or below BB rating).	12	2.5	Until 31 December 2010; maturities of up to five years

Sources: Official government publications and press releases.
Note: The cut-off date for this information was end of March 2009.

1) Or other currency as indicated.

2) Limit on guaranteed amounts as laid down by law.

3) €376 billion has been given as an indicative maximum amount.

Country	Costs	Guarantee limit (in EUR ¹⁾ billions) ²⁾	Amounts issued (in EUR ¹⁾ billions)	Time horizon
FI	Fixed fee is 50 basis points for unsecured debt and 25 basis points for covered bonds, plus an additional individual fee based on the credit rating of the issuer, as Finnish covered bond issuers have no applicable CDS spreads	50	0.0	Until December 2009 (to be reviewed in April 2009); maturities of between three months and three years (five years for mortgage-backed bonds)
SE	Maturities below one year: senior 50 basis points, covered bonds 25 basis points; maturities above one year: senior 50 basis points (covered bonds: 25 basis points) + median five-year CDS 1 Jan. 2007-31 Aug. 2008; credit rating charge: AAA 0.24%, AA 0.37%, A 0.45%. In addition, there is a supplement of 50 basis points. The supplement for covered bonds is 0.25%.	SEK 1,500	SEK 9.3	Until 30 April 2009; can be extended until December 2009 (guarantee runs until June 2014); maturities of between 90 days and five years
UK	50 basis points + median five-year CDS rate July 2007-July 2008 (previously 12 months to 7 Oct 2008)	GBP 250	GBP 43.9	Initially until April 2009, but has been extended until 31 December 2009; maturities of up to three years (can be extended to five years)

Sources: Official government publications and press releases.
Note: The cut-off date for this information was end of March 2009.
1) Or other currency as indicated.
2) Limit on guaranteed amounts as laid down by law.

2 INTERNAL TRANSFER PRICING: THEORETICAL TOOLS

THE NEED FOR INTERNAL PRICING RULES

At the end of the 1970s, the American commercial bank Bank of America realised that it had two difficulties regarding asset liability management (ALM): one linked to profit allocation, and the other linked to risk management. Retail banking units would book as profit the spread between the rate at which they originated loans to customers and the rate at which they remunerated customer deposits, regardless of market rates and maturities. If we take the example in Chart 17, this would mean a spread of 7% being booked as profit.

However, this risks overestimating or underestimating the contribution the retail unit makes to the bank's profit. For instance, if the market rate for five-year fixed financing is 12%, the loan actually generates losses, not profit. In addition, this solution leaves the management of the entire interest rate risk to the retail unit, which lacks the skills to manage this risk. Business units could not have constant commercial margins.

To avoid these problems, a transfer-pricing framework is needed in order to recognise the true value created by business units and to concentrate risks in one single unit, generally the ALM funding desk. This is basically the equivalent of setting up an "internal market" for funds within the bank, with prices and conditions for this market determined by the Treasury/ALM department.

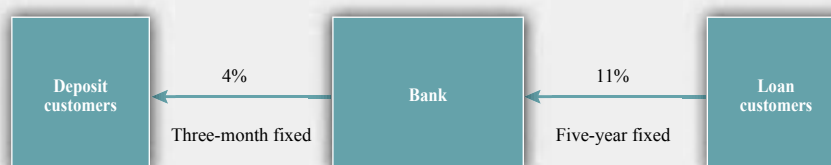
GENERAL GUIDING PRINCIPLES FOR INTERNAL TRANSFER PRICING

In a pricing system for fund transfers, the funding requirements for all transactions are considered to go through the ALM desk. This process is illustrated in the Chart 18.

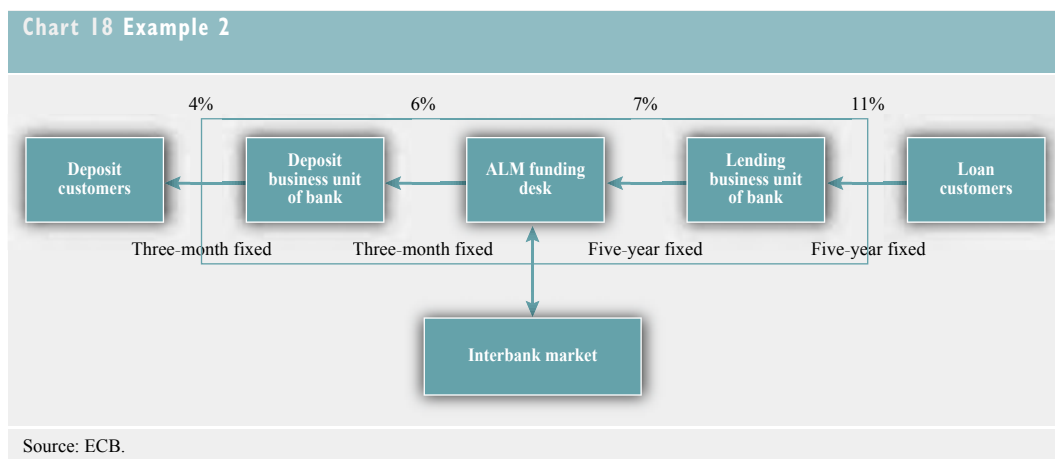
This process is based on the following prerequisites:

- A business unit wanting to hedge some financial risks transfers them to the ALM desk. This is recorded in terms of capital consumption or in terms of margin reduction.
- The business unit gives all of its deposits to the ALM desk to be invested at market rates and goes to the ALM desk for all of its funding requirements if it wishes to grant loans.
- The ALM desk is the bank's only interface with the interbank market, where it clears the net position of the bank (i.e. as a net borrower or a net lender).
- The ALM desk defines the terms and conditions governing its charging/remuneration of business units for their loans/deposits. These terms and conditions should mirror market conditions (i.e. be the same as would be agreed between the bank and an external counterparty). They are calculated for each operation booked in the balance sheet and for the entire life of the contract in order to get a constant margin.

Chart 17 Example 1



Source: ECB.



- The ALM desk centralises the interest rate risk for the entire bank and is responsible for hedging this risk. The profitability of business units is thus insulated from any impact of interest rate movements during the life of the loan.
- Most of the time, the internal transfer pricing is computed on a contract-by-contract basis. However, in some cases, it can be calculated on a “pool” basis: where it is difficult to find the contract-by-contract information in the database, where the ALM department does not have enough time to spend on the calculations, where an operation has a minimal impact on the balance sheet, etc. In practice, this means that the AL manager provides some conventional schedule rules based either on the stock¹ (e.g. affecting a whole stock of operations) or on the flows (e.g. valid for a pool of operations such as liabilities or assets without maturity or products correlated imperfectly with financial market indices).²
- Sometimes, in order to achieve commercial objectives (e.g. to maintain or strengthen a market share without changing the commercial policy), the internal transfer price given to the business unit is lower than it should be. This a balancing out method, because if a lower internal transfer price is profitable for the business unit in question, the gap between what the internal

transfer price should be in the light of market conditions and the terms of the transaction and what it is for the business unit has a cost (which is usually passed on in other products).

IMPACT ON INTERNAL PRICING AND PROFITABILITY

The internal transfer price is a decisive factor when computing analytically the profitability of the business. In our example, the ALM department charges the business unit the rate that it would cost to borrow the money in the interbank market for five years at a fixed rate, i.e. 7%, leaving a profit of 4% on loans (i.e. 11-7%) for the business unit. Likewise, the ALM desk remunerates deposits at the rate that it would cost to lend the money in the interbank market for three months, i.e. 6%, leaving a profit on deposits of 2% (i.e. 6-4%) for the business unit. The total profit of the business unit is then reduced to 6% (instead of 7% in the simple example) and can be broken down into a profit on loans (4%) and a profit on deposits (2%). The 1% difference in profit goes to the ALM desk.

- 1 For example, the internal transfer price is calculated using the average for ten-year swap rates.
- 2 A stock, $S(t_i)$, cash flows, $CF(t_0, t_i)$, and an interest rate, $IR(t_0, t_i)$, are fixed. The interest rate associated with the stock is the internal transfer price, defined as the “sum-product” of the cash flows and their interest rates.

As regards the ALM desk, it would be impractical and costly to implement a structure in which every individual deposit was lent separately into the market and every loan required funds to be borrowed separately from the market. Thus, the ALM department aggregates all the individual transactions from the different business units, only using the external market to borrow or lend the net amount. The prices charged to the business units for their individual transactions are thus notional prices. By defining an internal transfer price, the ALM department (or the Treasury department) is transformed into a profit centre. The profit of the ALM department is the difference between the internal transfer pricing and the financial market conditions.

Some economists recommend splitting ALM departments into different profit centres: an interest rate risk profit centre, a liquidity risk profit centre, a currency risk profit centre, an inflation risk profit centre, a credit risk profit centre and an equity risk profit centre.

3 INTERNAL PRICING OF LIQUIDITY – A FUTURE CHALLENGE FOR REGULATORS AND FINANCIAL STABILITY

Supervisors have recently identified the relevance of this issue and have put it on the regulatory agenda for the reform of liquidity practices. A number of recommendations have been made since the beginning of the crisis, recognising the importance of internal pricing policies.

BASEL COMMITTEE ON BANKING SUPERVISION – FEBRUARY AND SEPTEMBER 2008

In February 2008 the Basel Committee on Banking Supervision published a report³ underlining the importance of close coordination between treasury functions and business lines “to ensure a full appreciation of potential contingent liquidity risks and to reduce the extent to which firms’ internal transfer pricing systems [assess] business lines for building contingent liquidity exposures”. In September 2008 the Basel Committee published another paper⁴, stressing the need for banks to incorporate liquidity costs, benefits and risks in their internal pricing for all significant business activities (both on and off the balance-sheet), in order to align the risk-taking incentives of individual business lines with the liquidity risk exposures their activities create for the bank as a whole. The paper also recommends taking into account the anticipated holding periods of assets and liabilities, their market liquidity risk characteristics and any other relevant factors, including the benefits of having access to relatively stable sources of funding, such as some types of retail deposit. Finally, it suggests that the analytical framework should be reviewed as appropriate to reflect changing business and financial market conditions and so maintain the appropriate alignment of incentives.

THE SENIOR SUPERVISORS GROUP – MARCH 2008

In March 2008 the Senior Supervisors Group also noted in a report⁵ that the “[banks] that experienced the most significant challenges in meeting their funding liquidity needs were those that, before the market turmoil began,

[had] no priced contingent liquidity internally or externally to reflect the ex post assessment of the nature and risk profile of these liabilities”.

THE COMMITTEE OF EUROPEAN BANKING SUPERVISORS – SEPTEMBER 2008

In September 2008, the Committee of European Banking Supervisors laid down 30 Recommendations⁶ for the management and supervision of liquidity risk. Recommendation 2 provides general guidance on how to address the observed shortcomings of internal allocation of funding costs. CEBS recommends that institutions “have in place an adequate internal mechanism – supported where appropriate by a transfer pricing mechanism – which provides appropriate incentives regarding the contribution to liquidity risk of the different business activities. This mechanism should incorporate all costs of liquidity (from short to long term, including contingent risk)”. This allocation of costs should reflect not only the liquidity needs of the various business units but also the liquidity risk that they generate. The attention of senior management was also drawn to the potential adverse incentives for some of the units in charge of the liquidity management, typically the front office and treasury functions. Detailed guidance will be provided by CEBS over the course of 2009.

THE INSTITUTE OF INTERNATIONAL FINANCE

In August 2008 the Institute of International Finance published a report⁷ recommending that banks “ensure that they have in place effective internal transfer pricing policies to reflect implied or incurred actual or potential costs related to reasonably anticipated liquidity demands from both on and off-balance sheet

3 Basel Committee on Banking Supervision (2008 a) “Liquidity Risk: Management and Supervisory Challenges”.

4 Basel Committee on Banking Supervision (2008 b) “Principles for Sound Liquidity Risk Management and Supervisions”.

5 Senior Supervisors Group (2008) “Observations on Risk Management Practices during the Recent Market Turbulence”.

6 Committee of European Banking Supervisors (2008) “Technical Advice to the European Commission on Liquidity Risk Management” (Second part).

7 Institute of International Finance (2008) “Final Report on Market Best Practices for Financial Institutions and Products”.

business”. It also urged banks to take into account “the liquidity of relevant underlying assets, the structure of underlying liabilities and any legal or reasonably anticipated reputational contingent liquidity exposures”. Furthermore, the report insists on the need for internal transfer pricing policies that “ensure that lines of business within the firm that create liquidity exposures are proportionally charged for the cost to the firm of maintaining corresponding liquidity positions”.

Regulatory authorities and financial institutions now agree on the diagnosis: managing internal transfer pricing is key for financial stability. Thus, regulators need to encourage – and banks need to implement – new rules that will reflect all the dimensions of liquidity.

