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EUROPEAN CENTRAL BANK

EUROSYSTEM



## EU BANKING STRUCTURES

OCTOBER 2007



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## ABBREVIATIONS

### COUNTRIES

AT	Austria	LU	Luxembourg
BE	Belgium	LV	Latvia*
BG	Bulgaria	MT	Malta*
CY	Cyprus*	NL	Netherlands
CZ	Czech Republic*	NO	Norway
DE	Germany	PL	Poland*
DK	Denmark	PT	Portugal
EE	Estonia*	RO	Romania
ES	Spain	SE	Sweden
FI	Finland	SI	Slovenia*
FR	France	SK	Slovakia*
GR	Greece	UK	United Kingdom
HU	Hungary*		
IE	Ireland		
IT	Italy		
LT	Lithuania*		

### OTHERS

EU (EU25)	European Union (25 countries, after enlargement on 1 May 2004)
EU15	European Union (15 countries, before enlargement on 1 May 2004)
MU12	Monetary Union (12 countries participating in the euro area)
NMS	New Member States (10 countries, marked with *)
RoW	Rest of the World (non-EU25 countries)







## EXECUTIVE SUMMARY

The EU banking structures report is an annual publication containing information on structural developments in the EU banking sector. It is based on a wide range of indicators and on the exchange and assessment of qualitative information by the Banking Supervision Committee (BSC) of the European System of Central Banks (ESCB). The BSC comprises representatives of the central banks and banking supervisory authorities of the EU Member States and of the European Central Bank (ECB).

The report focuses on the structural developments that took place in 2006 and, where possible, provides information on the first half of 2007. The overview chapter starts with the main regulatory developments in the financial sector, including the implementation of two very significant Directives, the Capital Requirements Directive and the Markets in Financial Instruments Directive. Moreover, the assessment of the Lamfalussy framework in terms of speeding up the adoption of Community legislation in the financial sector and promoting its consistent implementation at the national level will be completed by the end of the year.

Consolidation in the banking sector continued in 2006, although there were signs of deceleration compared to previous years. Whereas the number of credit institutions declined, total assets of the EU banking sector increased, signalling the emergence of larger institutions. While consolidation continued, concentration, for the first time during the period under examination, stagnated at previous year levels in terms of market share of the five largest institutions and even slightly declined when examining the entire market using the Herfindahl index. The cross-border banking landscape in the EU also remained largely unchanged compared with the previous year. This could be attributed partly to the decline in both the number and value of cross-border intra-EU M&A activity observed in 2006. Still, the value of M&A transactions in the first half

of 2007 increased and a number of significant deals is currently in progress.

The structure of the banking markets still varies significantly within the EU, but the dispersion of most capacity indicators has been declining over time, closing the gap between Member States. Finally, banking intermediation continues to increase, as the total assets of credit institutions have been growing faster than GDP.

The chapter on liquidity risk management of cross-border banking groups in the EU focuses mainly on issues related to liquidity regulation and to developments in the organisation of liquidity risk management of banks in the period covered by the report (i.e. until the end of 2006), as well as their financial stability implications. The link between the static evaluation of liquidity and the dynamic one (i.e. market liquidity in stress conditions) was outside the scope of the analysis. The chapter is based on a survey aiming to assess potential obstacles as perceived by large EU cross-border banking groups to their liquidity risk management practices. Its main findings and conclusions can be summarised in the following points:

Although liquidity risk management by European cross-border banks takes place in a rather fragmented regulatory environment, liquidity risk regulation is not perceived to impose undue restrictions on the cross-border management of intra-group liquidity. Cross-border banks do not object to the existence of liquidity regulation per se, but would like supervisors to take a concerted approach within a banking group. Other regulations identified by the banks as posing possible obstacles relate to the home/host arrangements and the large exposures limits.

Major market developments identified as impacting the liquidity risk management of banks include the shortening time horizon for payment obligations, the use of more market-based and potentially more volatile funding



sources and the increasing need for high quality collateral. From a financial stability perspective, given the absence of stress events in the period under review, it was considered premature to ascertain whether these market developments encourage improved liquidity risk management practices or, given the increased complexity and interconnectivity of financial systems, they could increase the severity of a liquidity event.

Despite the initiatives taken by central banks to address problems of international flows of liquidity and the cross-border use of collateral, which are acknowledged by the industry, cross-border banks still identify the existence of certain obstacles regarding the pooling of liquidity and the cross-border use of collateral. These obstacles relate to transaction costs, different time and currency zones, the divergence in standards of access to central bank money outside the euro area, the non-connectivity of payment and security settlement systems and legal issues. From a financial stability perspective, the potential improvement in the efficiency of liquidity risk management of banks resulting from the lifting of technical barriers (if any) would be welcome. With regard to other potential barriers that are not merely technical in nature, such as legal or prudential barriers, it is important to keep these under continuous review. In this context, the possible increase in contagion risk or reduction in the ability of a bank to quickly obtain liquidity locally in a stress situation should be considered.

The internal corporate governance and organisation of liquidity risk management varies according to each bank's business model and structure. Nevertheless, the trend identified in past BSC surveys towards the centralisation of liquidity management policies and procedures and the decentralisation of day-to-day liquidity management was reconfirmed.

A clear divergence emerged between the larger banks with more sophisticated risk management systems that would prefer to use

their own internal models also for regulatory purposes and the smaller banks that use, and intend to continue using, the regulatory liquidity ratios also for internal management purposes. The use of more sophisticated internal liquidity risk approaches (e.g. "Liquidity at Risk" models) is still not a common practice, although cross-border banks are increasingly developing such approaches for internal risk management. Stress testing procedures are associated with forward-looking scenarios which simulate abnormal market periods and are often not reflected in the historical data of the institution. Further work in this area could focus on the specific models and parameters used by banks with regard to their stress testing models and the stress levels designed in the context of their contingency funding plans.

The chapter on distribution channels in retail banking presents the evolution of channels operated by banks (branches, ATMs and electronic channels), explores the cooperation of banks with non-banks (post-offices, retailers and financial agents/services groups) and assesses the main risks posed by developments in the distribution strategies of banks and their respective financial stability implications.

Banks are adapting their branch networks in terms of location and services offered to clients in order to make them more cost-efficient and to integrate them better into their overall distribution strategy. At the same time, electronic channels are growing rapidly, and are not only providing information and transaction services, but are being used for the promotion and sale of banking products. Finally, banks are intensifying their cooperation with retailers, financial companies and financial agents/services groups in an effort to address the fierce competition, especially in the area of consumer credit.

The aforementioned developments, and especially the emergence of electronic channels as an increasingly important means of distribution for banking products, could entail operational, reputational, liquidity, legal and

strategic risks. However, as electronic channels are still of relatively limited importance for the majority of banks, no significant financial stability concerns have been raised to date. Nevertheless, the distribution strategies of banks need to be monitored, in view of not only their possible financial stability implications but also their potential to impact on competition and integration in the banking sector.

# I OVERVIEW OF DEVELOPMENTS IN EU BANKING STRUCTURES

This chapter provides an overview of the structural developments that took place in the EU banking sector in 2006 (and when possible in the first half of 2007),<sup>1</sup> elaborating on the general regulatory developments related to the banking sector, as well as on developments in banking structures (i.e. consolidation, internationalisation and intermediation).

## 1.1 REGULATORY DEVELOPMENTS

The year 2007 marks the implementation of two of the key Financial Services Action Plan (FSAP) initiatives aimed at advancing the creation of a fully integrated and competitive market for financial services in Europe. First, the Capital Requirements Directive (CRD),<sup>2</sup> which implements “Basel II” for credit institutions and investment firms, was adopted in June 2006. The CRD came into force in January 2007 for the credit institutions and investment firms opting for the simpler approaches, while the most advanced approaches will become available from the start of 2008. Second, the Markets in Financial Instruments Directive (MiFID) will come into effect in November 2007.

Both the CRD and the MiFID are intended to boost the efficiency and competitiveness of the financial sector. The CRD provides incentives for improving risk management systems to better align capital requirements to the risk profile of each institution and, in the case of cross-border institutions, it includes provisions for cooperation between the home and host supervisor both in going concern and in the event of a crisis. At the same time, the MiFID facilitates the cross-border offering of financial services by investment firms, as it extends the range of services and activities that investment firms can “passport” and adds clarity to the allocation of responsibilities between the home and host authorities, and promotes investor protection.

Finally, in September 2007 Directive 2007/44/EC as regards procedural rules and evaluations criteria for the prudential assessment of

acquisitions and increases in holdings in the financial sector came into force. The Directive aims to improve the legal certainty, clarity and transparency of the supervisory approval process with regard to acquisitions and increase at shareholdings in the banking, insurance and securities sectors. Member States must comply with Directive 2007/44/EC before 21 March 2009.

Following the adoption of the CRD, the Committee of European Banking Supervisors (CEBS), having already delivered the main bulk of its guidelines on the CRD implementation,<sup>3</sup> aims to increasingly engage in monitoring the application of those guidelines in day-to-day supervision and in furthering convergence of supervisory practices across the EU. One of the main tools of CEBS for monitoring and enhancing convergence of supervisory practices in the EU is operational networking. Operational networking focuses on the supervision of (at this juncture a sample of ten) cross-border groups, and in particular on the exchange of information and experience between the consolidating and host supervisors. It is aimed at identifying and addressing problems, inconsistent approaches and technical issues relating to the implementation of the CRD and of the CEBS guidelines. Accordingly, it could highlight priority work relating to obstacles to cross-border banking and supervision and assist the development of pragmatic responses.

At the international level, the Basel Committee on Banking Supervision (BCBS) and the Accord Implementation Group (AIG) have

1 This will be the last report on EU banking structures to refer to the EU25 and MU12, as the structural statistical indicators (SSIs) of the banking sector, presented in Annex 1, were collected at the end of 2006 by the supervisory authorities and central banks which were members of the BSC. Bulgaria and Romania reported historical data to the extent possible; this data is presented for this year in memo lines.

2 Comprising Directive 2006/48/EC and Directive 2006/49/EC

3 In the latter half of 2006 CEBS updated its guidelines on Common Reporting and on Financial Reporting, provided additional guidance on concentration risk and on stress testing and published guidelines on interest rate risk in the banking book and on outsourcing.

shifted their focus on monitoring the progress of Pillar 1 and, especially, Pillar 2 implementation and the cooperation of home and host supervisors. Moreover, in the pursuit of its strategic objectives, BCBS has embarked on new streams of work.<sup>4</sup>

In addition to the aforementioned initiatives, a topic that has attracted increased attention is the evaluation of the current supervisory arrangements. The European Banking Committee (EBC) is investigating the implications of the increased cross-border consolidation on the existing supervisory framework, focusing on five key areas, namely liquidity risk management,<sup>5</sup> emergency liquidity assistance, crisis management, deposit guarantee schemes and reorganisation and winding up procedures. Furthermore, the Financial Services Committee has set up a sub-group on long-term supervisory arrangements to identify the strengths and weaknesses of the current supervisory framework for banking groups, insurance groups and financial conglomerates and to examine the scope for further practical improvements in the operation of the current arrangements.

Finally, the Inter-Institutional Monitoring Group for Financial Services (IIMG)<sup>6</sup> will assess the implementation and functioning of the Lamfalussy framework<sup>7</sup> across sectors by December 2007. The IIMG published its second interim report in January 2007, making some preliminary suggestions for the improvement of the process, which has been considered successful in improving convergence and in promoting transparency to and consultation with the market. However, the IIMG interim report requested regulatory self-restraint at all levels of the process, called for more clarity in the choice between directives and regulations, highlighted the need for impact assessment and consultation at all levels and indicated that further efforts were needed to enhance supervisory cooperation.

## 1.2 CONSOLIDATION AND MERGERS

Consolidation in the EU banking sector continued in 2006, despite signs of deceleration compared with previous years. At the end of 2006, the number of credit institutions in the EU25 stood at 8,441 compared with 8,617 in 2005, registering a decrease of 2%. In the euro area the number of credit institutions declined by 1.9% to 6,130 in 2006, with NL, DE and FR once again being the main drivers of this trend. In the NMS the most significant reduction in the number of credit institutions (3.6%) was observed in the period under investigation. As a result the number of credit institutions at the end of 2006 stood at 1,515 compared with 1,572 in the previous year (see Chart 1).<sup>8</sup>

4 These new streams of work include liquidity risk regulation and management (especially under stress conditions); instruments that qualify for regulatory capital, putting emphasis on their loss-absorption capacity, national definitions of and distinctions between Tier 1 and Tier 2 capital and also covering issues related to their pricing by market participants, accounting treatment and the views of rating agencies; further work on economic capital, possibly focusing on new measurement approaches for credit risk, the treatment of diversification effects, the capture of complex counterparty credit risks, the treatment of interest rate risk, and the approaches to validation of internal capital assessments; and accounting and auditing, particularly in areas related to standards that could have a potentially large impact on financial institutions.

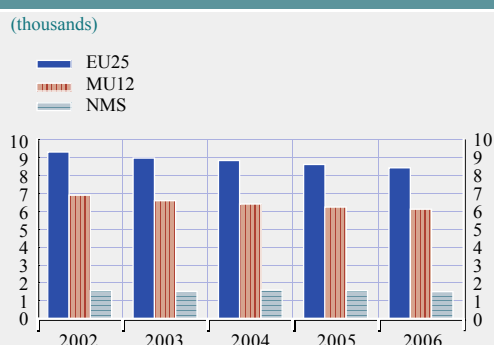
5 Please note that the ECB was requested to contribute to the work on liquidity. Chapter 2 is a streamlined version of this report

6 In the period 2002-2004 the IIMG (comprising six independent experts nominated by the European Parliament, the Council and the Commission) assessed the functioning of the Lamfalussy approach in the securities sector. Following the extension of the Lamfalussy framework to all financial sectors, formally completed in March 2005, a comprehensive, cross-sectoral assessment was deemed useful, leading to the reestablishment of the IIMG in July 2005, comprising again six members nominated by the EU institutions.

7 "Final Report of the Committee of Wise Men on the Regulation of European Securities Markets", 15 February 2001. This report is available on the European Commission website. See also the ECB Annual Report 2003, p. 111. The Lamfalussy approach is a four-level process for approving securities, banking and insurance legislation. Level 1 consists of framework principles, in the form of directives or regulations, to be adopted by normal EU legislative procedures. Level 2 arranges for the implementation of detailed measures in accordance with the Level 1 framework principles. Level 3 consists of enhanced cooperation and networking among EU supervisors to ensure a consistent and equivalent transposition of Level 1 and Level 2 legislation. Level 4 consists of strengthened enforcement, notably with action by the Commission to enforce Community law, underpinned by enhanced cooperation between Member States, their regulatory bodies and the private sector.

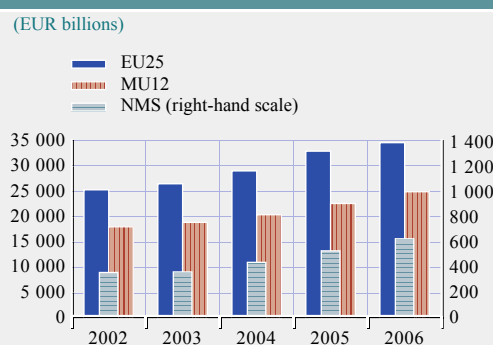
8 This mainly resulted from the ongoing consolidation of the cooperative sector in CY.

**Chart 1 Number of credit institutions**



Source: ECB.

**Chart 2 Total assets of credit institutions**



Source: ECB.

While the number of credit institutions fell, the total assets of the banking sector in the EU continued to grow significantly, although there was a decline in the growth rate compared with the previous year. More specifically, the total assets of credit institutions in the EU25 accounted for €36,820 billion in 2006, up by 11.9% compared with the previous year. At the same time, total assets in the NMS stood at €635 billion, representing an increase of 17.8% from 2005 (see Chart 2).

The decline in the number of credit institutions in the EU is closely related to M&A activity within the EU banking sector. The number of M&A transactions has been declining overall since 2000, with the exception of cross-border deals of EU banks in third countries (outward), which have been increasing, especially in the last two years (see Chart 3).

In terms of the value of M&As in the EU the picture is quite different: following a decline in the period 2000 to 2002, when the average annual decrease reached 49%, an increase in the value of M&A deals has been observed since 2003. The breakdown into domestic, intra-EU and extra-EU deals has varied significantly since 2000, however, domestic M&As have accounted for the majority of total M&A value with the exception of 2005, when cross-border, intra-EU transactions accounted for 51.5% of the total value of M&As<sup>9</sup> (see Chart 4).

In 2006 the decrease in the number of M&As was accompanied by an increase in the value of such transactions, mainly as a result of large domestic deals such as Banca Intesa and San Paolo IMI and Natexis and Ixis.<sup>10</sup> The value of acquisitions by EU credit institutions of entities in third countries<sup>11</sup> (outward) also increased, reaching the levels of intra-EU cross border transactions. The latter, despite marking a decrease from the previous year, remained at a significant level, including deals such as BNP Paribas and Banca Nazionale del Lavoro and Credit Agricole and Emporiki Bank.

The trend towards a declining number and increasing value of M&A transactions also continued in the first half of 2007, signalling an increase in the average transaction value.<sup>12</sup> At this time two large transactions with a potential significant impact for the EU banking sector are in the pipeline, namely the merger of Unicredit and Capitalia and the possible acquisition of ABN Amro.

9 This was due to major deals such as Unicredit and HypoVereinsbank, ABN Amro and Banca Antonveneta and Swedbank and Hansabank.

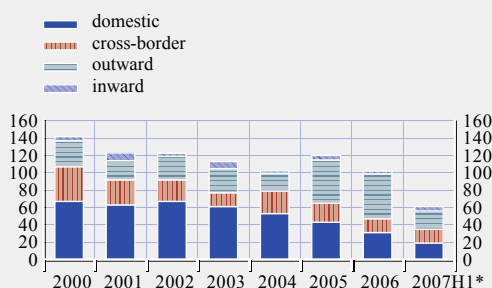
10 The merger between Natexis and Ixis constituted a significant transaction in the area of corporate and investment banking, following a wave of M&As in the retail sector.

11 Mainly Turkey, China, the United States, Romania, South-East Asia, Russia, Ukraine, Egypt, Croatia and Serbia.

12 Significant transactions in the first half of 2007 include the acquisitions of Finansbank AS by the National Bank of Greece, of Banca Lombarda e Piemontese by Banche Popolari Unite, of Sampo Bank by Danske Bank, and of Cassa di Risparmio di Parma e Piacenza by Crédit Agricole.

Chart 3 M&As involving EU credit institutions – number of deals

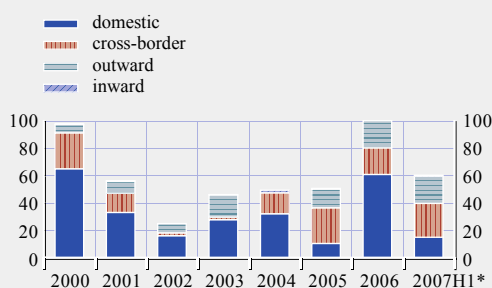
(EUR billions)



Source: Bureau Van Dijk, Zephyr.

Note: M&As include both controlling and minority stakes. For some of the deals, data is not reported. Cross-border M&A refers to an intra-EU25 transaction involving a non-domestic acquirer. Inward refers to M&A by a non-EU25 bank in the EU25 and outward indicates M&A of EU25 banks outside the EU25.

Chart 4 M&As involving EU credit institutions – deal values



Source: Bureau Van Dijk, Zephyr.

Note: M&As include both controlling and minority stakes. Cross-border M&A refers to an intra-EU25 transaction involving a non-domestic acquirer. Inward refers to M&A by a non-EU25 bank in the EU25 and outward indicates M&A of EU25 banks outside the EU25.

Besides the more “traditional” drivers for M&As,<sup>13</sup> a number of more recent developments have contributed to the creation of favourable conditions for M&A activity. The CRD promotes supervisory cooperation and International Financial Reporting Standards (IFRS) provide a more consistent framework for financial reporting, thus decreasing compliance cost at the cross-border level. Moreover, the benign economic environment, increased profitability of the banking sector and low interest rates (encouraging leveraged transactions and bond issuance) contributed to the recent wave of M&As. At the same time soaring stock markets supported the expectation that such deals could have a positive impact on the share price of credit institutions, despite the danger of overpaying. Finally, in the coming years it may be of interest to monitor the role of activist shareholders, who have attracted attention recently with their involvement in the banking sector.<sup>14</sup>

### 1.3 INTERNATIONALISATION OF THE EU BANKING MARKET

While domestic consolidation continued in 2006, no major changes appeared in the EU cross-border banking landscape compared with the previous year. In the EU25 domestic

institutions continued to account for the majority of the banking sector, with a market share of approximately 73% in 2006, which was largely unchanged compared to the previous year (73.4%). Foreign entities from other Member States and third countries accounted for 19% and 8.2% of EU25 total assets respectively (see Chart 5). However, the picture varied greatly across Member States: foreign branches and subsidiaries controlled 67.7% of the total assets in NMS in 2006, with high penetration by entities with parents in the EU25; the latter controlled a market share of 60.9%, intensifying their presence by 1.6% compared to the previous year. By contrast, foreign entities held only 17.9% of total assets in the euro area, but even there considerable differences can be identified, with FR and LU

13 Such drivers include: pursuing increased size, which could constitute a means of defence against a hostile takeover bid; realising economies of scale and scope, which could generate efficiency gains through the centralisation of back office operations and elimination of complementary structures. Furthermore, in the case of cross-border M&As, potential benefits include improving the group’s risk profile, as a dispersed geographical spread of activities could reduce country risk; acquiring an already existing branch and client network, a recognisable brand name and access to local expertise.

14 Supervisory authorities have started to give guidance on this topic; see, for example, Issue 20, May 2007 of the FSA Market Watch on Shareholder Activism, which provides clarifications on the approach that the FSA is likely to follow in some of the market conduct issues that may arise.



representing the two extremes, having foreign entities that accounted for 11% and 94.6% of total assets respectively.

Subsidiaries were the predominant form of foreign establishment in the EU25 in terms of market share in total assets, especially in the NMS, where in 2006 61.2% of total assets were controlled by foreign subsidiaries (of which 56.4% had an EU parent), compared with 6.5% controlled by foreign branches. In fact, in the NMS foreign subsidiaries increased their market share by 1.6 percentage points, whereas the market share of foreign branches saw a slight decline of 0.4 percentage points.<sup>15</sup>

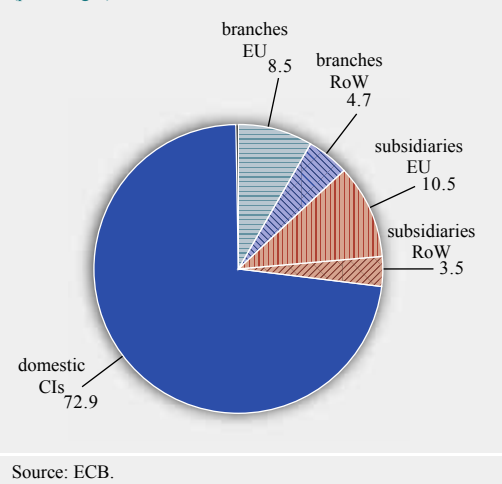
The prevalence of foreign subsidiaries over branches was also observed in previous years, despite the fact that EU legislation provides the possibility to transform into a European Company. The adoption of the European Company statute provides for the turning of subsidiaries into branches, the streamlining of operations and the centralising of functions, thus allowing economies of scale. Moreover, since branches (unlike subsidiaries) are subject to home country supervision, establishing branches would decrease the cost and complexity of compliance. Nevertheless,

there are several reasons for cross-border expansion through subsidiaries. Apart from the reasons which have already been presented in Section 1.2, subsidiaries have the advantage of reducing risk spreading between different legal entities in a banking group. The above confirms that, despite the importance of creating a legal and institutional framework to further facilitate cross-border consolidation, this is a predominantly market-led process.

In addition to foreign subsidiaries and branches, the cross-border provision of financial services is another way in which credit institutions have expanded their activities internationally. Available data on euro area credit institutions indicate that, on the assets side, cross-border holdings of non-bank securities and interbank loans are significant, and continued to increase despite showing signs of stagnation in the first quarter of 2006. By contrast, cross-border holdings of non-bank shares and especially cross-border loans have remained low, and in the case of the latter relatively stable over time (see Chart 6). On the liabilities side, cross-border interbank deposits constitute an important means of funding for credit institutions and have been overall increasing over time, while cross-border non-bank deposits have stagnated at a low level (see Chart 7).

**Chart 5 Share of foreign branches and subsidiaries in total asset of credit institutions in the EU (2006)**

(percentages)



The above findings are consistent with those of the report on financial integration in Europe,<sup>16</sup> according to which, in the euro area, interbank market and capital market related activities show concrete signs of increasing integration, while retail banking markets continue to be fragmented. According to the aforementioned report, the relatively high level of fragmentation in retail payment infrastructures contributes to the low level of retail banking. Other reasons include natural barriers, such as language, culture and importance of geographic proximity and customer relations. With the increasing

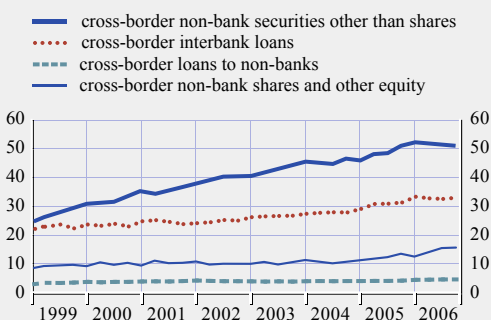
<sup>15</sup> As has already been mentioned, in 2006 only minor changes were observed in the EU25 and the euro area.

<sup>16</sup> See ECB, *Financial Integration in Europe*, (2007).



**Chart 6 Cross-border provision of financial services in the euro area (assets)**

(percentages)

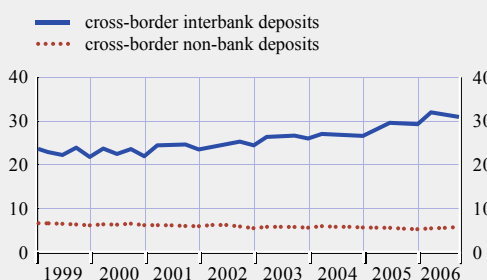


Source: ECB.

Note: Cross-border activity is expressed as a percentage of the total euro area provision of financial services.

**Chart 7 Cross-border provision of financial services in the euro area (liabilities)**

(percentages)



Source: ECB.

Note: Cross-border activity is expressed as a percentage of the total euro area provision of financial services.

importance of electronic distribution channels (see Chapter 3 of the report) and the growing familiarity of households with the internet, cross-border provision of services could become more prominent in the coming years. Furthermore, a number of policy initiatives, including the revision of the Consumer Credit Directive, the adoption of the Payment Services Directive and the establishment of the Single Euro Payments Area (SEPA)<sup>17</sup> are expected to contribute to a higher degree of integration in this area.

#### 1.4 MARKET STRUCTURE

Following a period of continuous growth in the concentration of banking markets at the EU level, in 2006 for the first time since 2001 a break in this trend for the EU25 and the euro area was detected, as concentration remained at previous year level. More specifically, the EU25 weighted average share of the five largest institutions in terms of total assets (the CR5) stood at 42% with the euro area appearing slightly more concentrated at 43%. Concentration levels remained comparatively high in the majority of the smaller Member States. The only countries having a lower concentration than the EU25 weighted average were DE, IT, LU, UK and ES. However, the more sensitive Herfindahl index, which equals the sum of the squared market

shares of individual institutions,<sup>18</sup> slightly receded both in the EU25 (to 589 in 2006 compared with 601 in the previous year) and in the euro area (to 629 from 641).<sup>19</sup>

By contrast with the trend observed at the EU25 and euro area level in the period from 2001 to 2005, concentration in the NMS overall declined during the period under investigation with the exception of the year 2005. In 2006 concentration in the NMS decreased, returning to 2004 levels, as the share of the five largest institutions stood at 59% and the Herfindahl index at 1,011, compared with 60% and 1,032 respectively for the previous year. Nonetheless, the banking sector in the majority of the NMS is more concentrated than in other EU Member States.

It should be noted that, although the CR5 and Herfindahl index on total assets provide a sound indication of the concentration levels, they are not an exhaustive measure, as concentration may be different in certain market segments or geographical regions.

17 See the Commission White Paper on Financial Services 2005 – 2010.

18 For further information on the definition of the Herfindahl index see Annex II.

19 The cited figures refer to the weighted average.

**Table 1 EU banking sector capacity indicators relative to population in 2006**

Country	CIs	Population per CI	Population per ATM	Population per employee	Population per branch	Population density	Assets per employee
BE	105	100,457	1,484	155	2,306	319	16,509
CZ	57	179,725	3,122	271	5,458	130	3,034
DK	191	28,466	1,848	117	2,536	126	17,726
DE	2,050	40,179	1,528	119	2,045	231	10,286
EE	14	96,050	1,465	237	5,489	30	2,707
IE	78	54,529	1,287	109	4,549	61	30,090
GR	62	179,290	1,667	179	3,005	84	5,068
ES	352	125,194	762	168	1,009	87	9,605
FR	829	76,231	1,322	145	1,579	115	13,156
IT	807	72,633	1,468	172	1,813	195	8,218
CY	336	2,292	1,534	71	818	83	6,860
LV	27	84,752	2,404	196	3,751	35	1,947
LT	77	44,078	2,962	394	3,805	52	2,012
LU	154	3,001	1,135	19	1,975	179	33,919
HU	212	47,502	2,643	256	3,105	108	2,385
MT	18	22,534	2,651	115	3,687	1,268	8,693
NL	345	47,365	2,014	140	4,728	400	16,078
AT	809	10,237	1,037	109	1,945	99	10,348
PL	723	52,741	3,837	245	7,393	118	1,216
PT	178	59,622	663	182	1,889	115	6,822
SI	27	74,370	1,319	170	2,885	99	2,943
SK	24	224,622	2,704	275	4,588	110	2,125
FI	361	14,588	1,606	220	3,296	16	10,651
SE	204	44,515	3,235	193	4,531	20	16,438
UK	401	150,955	1,002	134	4,700	247	21,304
<b>MU12</b>	<b>6,130</b>	<b>51,407</b>	<b>1,249</b>	<b>143</b>	<b>1,744</b>	<b>126</b>	<b>11,338</b>
<b>EU25</b>	<b>8,441</b>	<b>54,996</b>	<b>1,355</b>	<b>152</b>	<b>2,183</b>	<b>116</b>	<b>12,069</b>
BG	32	239,978	2,090	287	1,379	69	834
RO	39	553,353	3,605	369	4,828	91	873

Source: Computations based on figures in Annex 1, on the ECB Blue Book and on United Nations data.

Note: Population density is expressed as inhabitants per square kilometre. Assets per employee are measured in EUR thousands.

Following the downsizing of the branch networks of credit institutions, which has been observed in the past, in 2006 an increase in the number of branches was detected for the second consecutive year in the EU25. This increase was mainly due to developments in the French banking sector,<sup>20</sup> while in DE, NL and UK branch networks continued to be cut. In addition to the growth in the number of branches, the number of automated teller machines (ATMs) increased, providing better coverage for the population in most EU Member States.<sup>21</sup> While there are still significant differences in the banking sector capacity of different Member States, the dispersion for the majority of indicators has been

declining over time. Furthermore, when assessing the capacity of individual banking sectors, especially in terms of the distribution channels employed, there are a number of considerations that need to be taken into account, such as geography and population density (see Table 1).

<sup>20</sup> In FR a new bank was established by the "Poste", which became "la Banque Postale" at end 2005, transforming a large part of former post offices (app. 12,500) to "la Banque Postale" branches.

<sup>21</sup> For more information on the distribution channels used by EU credit institutions especially in the retail banking please see Chapter 3.

## 1.5 DEVELOPMENTS IN INTERMEDIATION

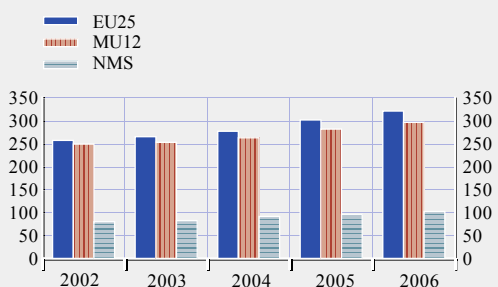
Intermediation in the EU25 strengthened in 2006: total assets of credit institutions in the EU25 grew by approximately 12% amounting to 321% of GDP (see Chart 9). Loans to customers also grew by 10.8%, which is the same rate as the previous year, and was supported mainly by the growth in loans to non-financial corporations and loans to households (13.8% and 10% respectively) (see Chart 8). It should be noted that this was the first time since 2002 that loans to non-financial corporations grew faster than loans to households, mainly due to the slowdown in the expansion of consumer credit and residential loans and to the pick-up in business for non-financial corporations owing to the favourable overall economic environment.

The developments regarding intermediation in the euro area were similar to those in the EU25. The total assets of credit institutions and loans to customers increased in 2006 by 10.1% and 9.7% respectively. Also in the euro area the main driver of growth in loans to customers were loans to non-financial corporations (12.8% up on the previous year), while the slowdown in loans to households was more pronounced than in the EU25, as the annual growth rate stood at 8.3%.

In the NMS the situation was quite different to both the EU25 and the euro area. The growth in total assets was 19.8%, even though this was lower than in the previous two years, and

Chart 9 Total assets of credit institutions

(in percent of GDP)



Source: ECB.

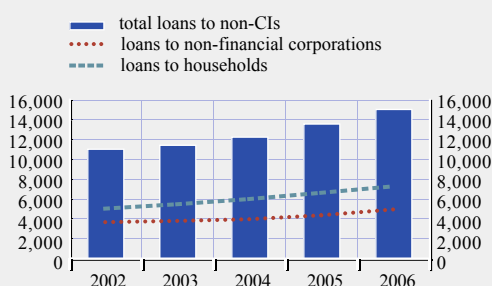
customer loans grew by 19.8% in 2006. However, in contrast to the EU25, the growth in the loan portfolio of NMS credit institutions was driven by loans to households more than loans to corporates. More specifically, in 2006 household lending increased by approximately 45%, while the growth in loans to non-financial corporations reached 30.2%.<sup>22</sup> From the above it is apparent that the gap in the depth of the banking sector in the NMS compared with the EU25 narrowed over the period from 2002 to 2006, with the total assets of the banking sector in the NMS exceeding their aggregate GDP for the first time in 2006.

Besides banking loans, direct access of non-financial companies to the market in the

<sup>22</sup> Please note that CY was not included in the calculations, as the breakdown of loans was reported for the first time in 2006.

Chart 8 Total loans to non-credit institutions (EU25)

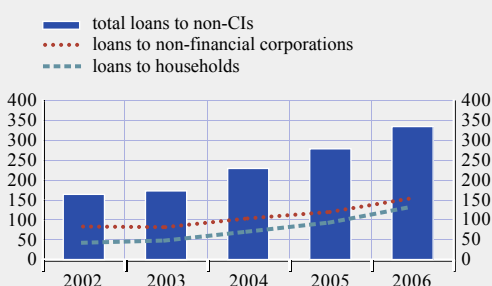
(EUR billions)



Source: ECB.

Chart 10 Total loans to non-credit institutions (NMS)

(EUR billions)



Source: ECB.

form of the issuance of both long and short-term debt securities expanded (see Table 7 of Annex 1). Finally, the total assets of non-bank financial intermediaries increased, with total assets under management of insurance corporations and investment funds growing by 7.2% and 16.2% respectively and pension funds rising by 10.2%.

## 1.6 CONCLUSIONS

In 2006, the main structural trends in the EU banking sector can be summarised as follows:

The consolidation process continued, despite showing signs of deceleration compared with previous years. At the same time, banking intermediation grew further, as the total assets of credit institutions have been growing faster than GDP. The decline in the number of credit institutions on one hand and the increase in the total assets of the EU banking sector on the other signal the emergence of larger institutions.

While consolidation progressed, concentration at the EU level stagnated for the first time during the period under examination. The cross-border banking landscape also remained largely unchanged compared with the previous year. This could be partly ascribed to the deterioration in both the number and value of cross-border intra-EU M&A transactions observed in 2006.

Finally, the structure of banking markets still varies significantly within the EU. Nevertheless, the dispersion of most capacity indicators has been declining over time, indicating that the gap between Member States has been narrowing.

## 2 LIQUIDITY RISK MANAGEMENT OF CROSS-BORDER BANKING GROUPS IN THE EU

Over recent years central banks and supervisors have been increasingly interested in how banks, in particular cross-border banks, measure and manage their liquidity risk. The Banking Supervision Committee (BSC) has been carrying out relevant work regarding liquidity risk management of banks over the last five years. The focus of this work has been on assessing how recent changes in the banking landscape have affected the liquidity risk management of banks, on gauging to what extent liquidity risk management practices have progressed and on ascertaining the industry's views with regard to the existence of potential barriers to the efficient management of liquidity risk across borders.

This chapter focuses on the liquidity risk management of cross-border banking groups in the EU, constituting the first analysis in this context to include the Member States which have joined the EU since 2004.<sup>23</sup> It mainly covers issues related to liquidity regulation and to developments in the organisation of liquidity risk management of banks in the period covered by the report (i.e. until the end of 2006), as well as their financial stability implications. The link between the static evaluation of liquidity and the dynamic one (i.e. market liquidity in stress conditions) is outside the scope of the analysis.

The findings presented in this chapter are based on the replies from central banks and supervisory authorities to a specific questionnaire and also draw on the outcome of direct contacts held with large cross-border European banks with their head offices located in France, Belgium, Spain, Portugal, Austria and the UK.

The chapter is structured as follows. First, there is a brief review of the topic, focusing on the relevance from the perspective of central banks and supervisors. Second, the report gives an overview of the regulatory framework for liquidity risk in the EU. Third, the main market developments that have an impact on the liquidity risk management of banks and issues

concerning the optimal pooling of liquidity and the use of collateral across borders are identified. Fourth, the main features of the liquidity risk management of banks are described, and in the final section the main findings and conclusions are presented.

### 2.1 LIQUIDITY RISK MANAGEMENT: ISSUES FROM A FINANCIAL STABILITY PERSPECTIVE

The purpose of this section is to discuss the main issues in liquidity risk management in the context of financial stability.<sup>24</sup>

#### 2.1.1 RATIONALE UNDERLYING THE INTEREST OF SUPERVISORS AND CENTRAL BANKS IN THE LIQUIDITY RISK MANAGEMENT OF BANKS

One of the banking system's main functions is maturity transformation between short-term deposits and long-term loans.<sup>25</sup> The funding liquidity risk of an individual institution can be defined as "... the risk that the firm will not be able to efficiently meet both expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm".<sup>26</sup>

<sup>23</sup> With the exception of Romania.

<sup>24</sup> For more details see Schmitz, S.W. and A. Ittner, Why central banks should look at liquidity risk, *Central Banking Vol. XVII No. 4*, 32-40, (2007)

<sup>25</sup> Diamond, D.W. and P.H. Dybvig, Bank runs, Deposit insurance and Liquidity, *Journal of Political Economy*, Vol. 91, No. 3, 401-409, (1983); Goodhart, C.A.E., *The Central Bank and the Financial System*, MacMillan, London (1995), and Diamond, D.W. and R.G. Rajan, Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking, *NBER WP 7430*, (1999). In these papers the authors argue that, despite its drawbacks, the structure of the bank balance sheet is indeed rational and optimal given the functions that the bank is designed to perform (i.e. liquidity, risk and maturity transformation).

<sup>26</sup> Basel Committee on Banking Supervision, The Joint Forum, The management of liquidity risk in financial groups, Basel, May (2006).

The liquidity risk of banks plays an important role in the systemic stability of the financial system<sup>27</sup> as liquidity shocks from one bank can propagate not only to other banks but also to the financial system as a whole via various channels.

First, given the existence of asymmetric information, a liquidity crisis in one bank can lead to increasing uncertainty in the wholesale and retail markets with respect to the liquidity situation of other banks, which in turn could cause funding problems for many banks in the event of a failure of the interbank market. Indeed, market participants might prefer to retain a liquidity surplus rather than lend to institutions whose solvency they find very difficult to assess. Moreover, a loss of reputation in one bank paired with asymmetric information could also undermine the confidence of depositors in other banks and could lead to bank runs.

Second, the increasing share of interbank exposures and money market instruments in banks' funding can provide an additional channel for contagion. On one hand, interbank lending can contribute to financial stability, as it enhances the incentives for market monitoring among banks. On the other hand, liquidity problems in one bank can directly translate into liquidity pressure for its interbank partners. New money market products (i.e. interest rate and FX derivatives) have gained in importance, which in principle could contribute to fostering financial stability by potentially enhancing the efficiency of the liquidity risk allocation in the financial system. At the same time, it might become increasingly hard for commercial and central banks to determine where liquidity risk is ultimately held, let alone to collect data on the exposure of individual institutions. The analysis of the concentration of liquidity and market activity in the funding markets is crucial for the assessment of the potential contagion of liquidity shocks at the individual bank level. A number of studies<sup>28</sup> present evidence that the EU money market is highly concentrated across all funding instruments (unsecured, secured and derivatives). The largest players also have

large holdings of interbank assets and liabilities. They emerge as money centre banks and distribute liquidity across the EU. The combination of such a tiered market structure and the concentration of activity increases contagion risk.<sup>29</sup> The negative externalities of liquidity problems are likely to differ across institutions. In this context, money centre banks (and their risk liquidity standards) may be deemed to be more important from a financial stability point of view than the smaller banks to which they distribute liquidity.

Third, market liquidity in the capital markets constitutes a further potential channel of contagion. Banks try to match inflows and outflows of liquidity in maturity brackets and hold liquid assets in order to cover unexpected mismatches between inflows and outflows. A "firesale" of assets can lead to severe market turmoil, if a sizeable amount of assets needs to be sold to overcome a liquidity shortage and market demand is not perfectly elastic.<sup>30</sup> This links the liquidity of individual institutions to market liquidity. The liquidity buffer of an individual bank which would have sufficed under normal circumstances might not do so under stress. Due to the drying up of market liquidity, the realised proceeds of banks may fall short of the expected proceeds and cause liquidity problems.<sup>31</sup> In addition, a liquidity crisis can translate into a solvency crisis, if the market turmoil is so substantial that it leads to a significant reduction in capital ratios.

27 Large, A., Financial stability - Managing liquidity risk in a global system, Speech at the 14th City of London Central Banking and Regulatory Conference, London (2005) and Diamond, D. W., R.G. Rajan, Liquidity Shortages and Banking Crises, *Journal of Finance* Vol. 60, No. 2, 615-30 (2005).

28 European Central Bank, Euro Money market Survey 2005 and 2006.

29 Mörttinen, L., P. Poloni, P. Sandars and J. Vesala, Analysing banking sector conditions - How to use macro-prudential indicators, *ECB Occasional Paper* No. 26, (2005).

30 Estrada, D. and R. Osorio, A market liquidity approach to liquidity risk and financial contagion, FMG LSE (2006).

31 Cifuentes, R., H.S. Shin and G. Ferrucci, Liquidity risk and contagion, *Journal of the European Economic Association*, Vol. 3, No. 2-3, 556-566 (2005).

### **2.1.2 THE INTERNATIONAL FLOW OF LIQUIDITY AND COLLATERAL AND ITS IMPACT ON THE LIQUIDITY RISK MANAGEMENT OF BANKS**

Cross-border banks operate in many value-transfer systems in different jurisdictions and currencies. The existence of barriers that might hamper cross-border and/or cross-currency flows of liquidity and collateral can create islands of liquidity, which banks cannot link effectively and efficiently. Hence, the potential barriers to the international flow of liquidity highlight that liquidity risk is of special interest to national central banks as their local market and respective participants can be affected by negative externalities and might suffer from the impact of a liquidity problem at a local branch or subsidiary of a cross-border banking group.

On a technical ground, the existence of barriers to the international flow of liquidity (e.g. the lack of interconnectivity between payment and securities settlement systems) should be addressed adequately.

From a regulatory and supervisory perspective, there is a rationale for increased international coordination and cooperation in the area of liquidity across jurisdictions and across currencies, particularly with regard to money markets, which display a high level of integration across jurisdictions.

Despite the potential inefficiencies that can result from barriers to the international flow of liquidity, there are arguments in favour of such restrictions. In particular, one argument frequently put forward is that national regulators and supervisors have to protect the (small) depositors and creditors of local banks as well as the participants in the local payment and securities settlement systems. A cross-border bank which faces a liquidity problem might withdraw liquidity from its foreign subsidiaries and branches to protect its franchise in its most important market. In doing so, it will transfer the cost of its liquidity problems to foreign financial systems. Therefore, each call for a reduction in

the regulatory barriers to the international flow of liquidity may need to be carefully weighed against the potential costs and benefits of the envisaged reform for internationally active banks and for national financial systems.

### **2.2 REGULATORY FRAMEWORK FOR LIQUIDITY RISK IN THE EU**

This section provides an overview of the current state of play with regard to liquidity regulation in the EU. It should be recalled that European banks are subject to the regulatory guidelines as indicated in the Capital Requirements Directive (CRD), which requires banks to adopt appropriate measures to develop a sound internal process for liquidity risk management.<sup>32</sup> EU supervisors will assess and monitor the adequate implementation of these guidelines within the scope of the Supervisory Review Process.<sup>33</sup> In addition to these guidelines, almost all EU countries have some additional form of regulation or monitoring addressing liquidity risk, although the range of national options varies widely.<sup>34</sup>

The new framework introduced with the CRD provides the crucial underpinning for the revision of current supervisory approaches. In addition, work on liquidity is currently carried out by the European Commission. Against this background, most authorities have changed or have in place plans to change the current supervision of liquidity risk of individual credit institutions and banking groups. Only one third of the authorities do not currently plan to introduce major changes in the way that they conduct liquidity risk supervision, and of these

<sup>32</sup> See Annex V (10) of Directive 2006/48/EC of 14 June 2006 relating to the taking up and pursuit of the business of credit institutions (recast), which also includes the requirement to have in place stress testing techniques and contingency funding plans.

<sup>33</sup> See Annex XI 1(e) of Directive 2006/48/EC: the review and evaluation performed by competent authorities shall inter alia include the exposure to and management of liquidity risk by the credit institutions.

<sup>34</sup> This heterogeneity may result from existing structural differences in the financial systems of Member States.



some have mentioned that they are waiting for the results of the work currently being undertaken by the European Commission on liquidity risk.

Among the countries that have explicit regulatory requirements for liquidity risk in place, a clear majority (80%) impose the same regulatory requirements on all credit institutions irrespective of size or type. Exemptions apply mainly to foreign branches, for which the task of liquidity supervision can be transferred to the home authorities.<sup>35</sup> One country reported the existence of a “hardship clause”, which enables supervisors to tailor (to a certain extent) the liquidity requirements for individual credit institutions, taking into account their specific activities.

Regarding the scope of application, four countries made clear distinctions between the types or the legal form of the credit institutions.

### 2.2.1 REGULATORY REQUIREMENTS FOR LIQUIDITY RISK AT NATIONAL LEVEL

A rough classification of the types of regulatory requirements may distinguish between quantitative, qualitative or mixed requirements. Quantitative approaches usually seek to report on and maintain certain liquidity indicators above regulatory minimum thresholds, whereas qualitative approaches focus more on banks' internal controls and reporting practices. In the case of mixed requirements, both types of approaches are used. In the EU, the use of mixed requirements is clearly predominant. Indeed, purely quantitative requirements do not fully take into account the liquidity risk management practices of banks and need to be complemented with qualitative requirements in order to encompass the overall business and liquidity needs of cross-border banking groups active in many jurisdictions. This is recognised by EU supervisors and is evident from the fact that currently no liquidity regulation relies solely on quantitative requirements.

The quantitative requirements generally used for the supervision of liquidity risk are normally based on the so-called stock-based, mismatch-based or hybrid approaches (see Box I). Although the main emphasis is on stock-based or mismatch-based approaches, no clear preference among regulators can be identified.<sup>36</sup> Recently introduced or proposed quantitative requirements have taken the form of hybrid stock-and-flow approaches, thus possibly reflecting a certain shift towards these types of quantitative approaches.

Although converging, differences still remain with regard to the qualitative regulatory requirements on the liquidity risk management of banks. When addressing the issue of qualitative requirements for liquidity risk, the BCBS qualitative requirements are normally used as a benchmark.<sup>37</sup>

<sup>35</sup> This should be seen in the context of Article 41 of the CRD, which attributes the primary *responsibility* to the competent authorities of the host member state but allows the *task* of supervision to be transferred to the home authority.

<sup>36</sup> It should also be mentioned that, even though a number of countries may have implemented the same type of quantitative requirements (e.g. a maturity ladder approach), the specific details in the respective calculations can vary considerably.

<sup>37</sup> Basel Committee on Banking Supervision, *Sound Practices for Managing Liquidity in Banking Organisations*, Basel, Feb. (2000). The most frequently reported qualitative requirements in the replies to the questionnaire were: (i) existence of internal policies and/or strategies to manage liquidity risk; (ii) definition of contingency planning and/or stress testing procedures; and (iii) existence of adequate internal controls. In many cases qualitative liquidity risk management requirements are incorporated into general supervisory requirements for internal controls. Five countries also made reference to internal audit, e.g. internal audit shall review compliance with the supervisory regulation on an annual basis.

## Box I

## QUANTITATIVE APPROACHES TO LIQUIDITY RISK

**Stock-based approaches** require a bank to hold a stock of highly liquid assets that are immediately convertible into cash in all market conditions. The stock is compared with total assets or some measure of liquidity risk to determine whether it is adequate.<sup>1</sup> The underlying rationale is that the higher the level of liquid stock the higher a bank's resilience to severe liquidity shocks. Also from the regulatory perspective, by holding a stock of high quality, reliably liquid assets, the external consequences of an individual bank's actions (e.g. asset market dislocation caused by “firesales”) can be limited. Although these stock-based approaches facilitate the assessment of the vulnerability of an individual bank to a sudden liquidity shortage, especially in comparison with its peers, they do account for the use of different liquidity sources in different time periods.

**Mismatch-based approaches** take into account this broader time dimension, assessing the level of liquidity of a bank by focusing on a predicted net cash position through time. The use of a mismatch-based approach is largely consistent with the risk management practices of banks as banking groups tend to use mismatch analysis as a metric to monitor the level of liquidity risk, as stated in the report of the Joint Forum, “*The Management of Liquidity Risk in Financial Groups*” (2006).<sup>2</sup>

**Hybrid approaches** combine both stock and mismatch approaches, thus attempt to reduce some of their individual shortcomings.<sup>3</sup> Nevertheless, even hybrid approaches have the limit of relying on backward-looking data, while the liquidity situation of a bank might change abruptly, and therefore they are not able to fully consider the stochastic dimension of liquidity.

1 An example of a stock-based measure is the ratio of stock of liquid assets to total assets or net outflows.

2 An example of such an approach is the gap analysis of mismatches of inflows and outflows for different maturities.

3 An example of a hybrid approach is a stock of liquid assets relative to a mismatch-based measure of liquidity risk.

### 2.2.2 IMPLEMENTATION OF THE HOME-HOST SUPERVISORY ARRANGEMENTS FOR LIQUIDITY RISK

The practical implementation of the current European framework for liquidity supervision is quite diverse across Member States. Given the increased international activity of cross-border banks, the rationale for national liquidity regulation may need to be re-examined and weighed against the fact that today, more than in the past, the stability of internationally active banks depends increasingly on timely flows of liquidity across borders.

Approximately half of the authorities in the EU apply the same treatment to EEA branches as that envisaged for banks authorised in their countries. Many countries reported the existence of different practical arrangements of liquidity rules. These arrangements range from regular bilateral meetings where home and host supervisors discuss specific liquidity issues, to regulations providing for (i) less stringent supervision over the liquidity risk exposures of EEA bank branches (e.g. only off-site supervision and reporting for branches; whereas there is also on-site supervision for subsidiaries) or (ii) when certain conditions apply and in certain circumstances, exemptions from host-country liquidity supervision for

EEA branches<sup>38</sup> (including the possibility of delegating liquidity supervision to the home-country authority). This generally “lighter” regulatory treatment reserved for branches in some countries may be interpreted as a practical tool to deal with the trend among cross-border groups towards centralising liquidity risk management, as this trend requires the reliance on in-depth information coming from the home-country authorities which, in turn, must have the power to obtain such information from the parent company.

The European legislative framework on liquidity supervision is general and provides the necessary leeway for authorities to set up the aforementioned arrangements. However, it also allows national regulations on liquidity risk to not only vary with respect to the supervisory tools applied by the authorities, but also with respect to the scope of application of those tools.

### 2.2.3 REGULATORY INFLUENCE ON INTRA-GROUP CROSS-BORDER LIQUIDITY FLOWS

#### INDUSTRY PERSPECTIVE

Large cross-border banking groups have a strong interest in changing the current regulatory regime. The heterogeneity of the regulatory approaches of individual countries was identified as the main source of dissatisfaction, rather than the existence of regulation per se. In a nutshell, the European banking industry would like to see a concerted approach by regulators with regard to the supervisory framework for liquidity risk.

The large banks also challenge the quantitative regulatory approaches to liquidity risk, stating that these regulatory requirements are lagging in terms of information content relative to the internal approaches used. On the other hand, smaller banks mostly apply quantitative approaches as required by their regulators, which at the same time function as a central indicator for their internal liquidity risk management.<sup>39</sup>

Furthermore, the current division of supervisory responsibilities is a source of dissatisfaction for

banks. Indeed, whilst the current regulatory framework provides the host country with the responsibility for supervision of liquidity risk for EU branches, most cross-border banking groups manage their liquidity centrally in the EU. In the light of this, some EU supervisors have already finalised bilateral agreements extending home-country responsibility to EU branches, provided that certain procedures are in place to ensure adequate group-wide liquidity risk management by the head office and the supervision thereof by the home-country supervisor.

Although not directly related to liquidity regulation, the following have been raised by the cross-border banks as posing obstacles to their effective liquidity risk management: (i) intra- group limits within the large exposure rules and, to a lesser extent, (ii) reserve requirements.

More specifically, banks believe that the current large exposures rules should be revisited. Cross-border banking groups would like rules on large exposures to refrain from imposing limits on intra-group exposures to the extent that such restrictions represent an obstacle to sound risk management practices within the banking group as a whole.<sup>40</sup>

In addition, certain banks also made reference to the reserve requirements regulation. Cross-border banks need to manage their reserve requirements locally, as reserve requirements are applied on a decentralised basis.<sup>41</sup> In certain

38 In one country a minor relief for foreign subsidiaries was also mentioned by the authorities.

39 European Central Bank, *Developments in banks' liquidity profile and management*, May (2002), p. 17.

40 Large exposure rules may be seen as a regulatory obstacle by banks for liquidity risk management in those countries where the option of exempting intra-group credit from the large exposure limits was not exercised.

41 This argument was understood as being related to non-euro area countries (please note that in the UK there are no reserve requirements). Indeed, in the euro-area these requirements are low (2%), need to be met only on average over a maintenance period and are remunerated at a close to market rate. Furthermore, the collateral framework enables the cross-border use of collateral via the correspondent central bank model or links.

non-euro area countries the calculation methodology for the reserve requirements is viewed as an impediment to intra-group funding, as the reserve requirements apply to non-resident and not to resident interbank funding. Thus a local entity gains in refinancing locally by borrowing money from a local bank and not from its parent company abroad. Furthermore, in some non-euro area countries, the levels of reserve requirements remain high and in some cases have been recently increased.<sup>42</sup>

### **SUPERVISORY PERSPECTIVE**

With regard to the replies received to the survey, the great majority of authorities from Member States reported that their liquidity regulation does not create impediments to cross-border liquidity flows within a banking group. However, some authorities recognised that other regulations not directly aimed at monitoring banks' liquidity risk, such as legal restrictions in the cross-border use of collateral, fiscal policies and large exposures limits, may impose constraints on cross-border liquidity flows.<sup>43</sup>

Authorities also acknowledged that for internationally active banks the co-existence of different liquidity rules and reporting requirements (rather than the liquidity and reporting requirements per se) may create some difficulties.

In this context, authorities recognised that in the current global markets, the existence of national rules requiring the branches of foreign banks to hold a given amount of liquid assets<sup>44</sup> and/or restricting intra-group transactions may impose higher costs on banking groups as a whole than in the past. These costs are associated with holding "idle" assets that have a low or negligible return or seeking liquid funds from other sources other than from the ones most easily accessible (i.e. entities within the same group). But at the same time, authorities have stated that a reassessment of existing rules needs to be undertaken also taking into account financial stability considerations and

not solely the increased efficiency of liquidity management.

## **2.3 RECENT DEVELOPMENTS REGARDING LIQUIDITY RISK MANAGEMENT BY BANKS**

### **2.3.1 STRUCTURAL DEVELOPMENTS**

The traditional form of liquidity risk for banks, which stems from the maturity transformation of potentially illiquid liabilities into less liquid assets, still exists, but structural developments in the banking industry have changed its nature, widening the sources of liquidity risk and shifting the focus of liquidity risk management.

There are several dimensions to these changes, namely a shorter time horizon for payment obligations, resulting from the use of real-time systems and the increased internationalisation of banking group operations, and structural changes in the funding structure of banks, including significantly greater reliance on

<sup>42</sup> For some countries, especially those that have their currencies pegged to another currency, the increase in reserve requirement and the remuneration of the reserve requirement below market rates may be used as a monetary policy instrument. However, the underlying rationale for changes in reserve requirements is outside the scope of this report. The aim was simply to report that this issue was raised by some banks.

<sup>43</sup> Three of the five countries which replied positively to the existence of a regulatory impact on intra-group flows, made reference to the EU large exposure rules, which could imply that these rules are seen as a regulatory obstacle by banks for liquidity risk management in those countries where the option of exempting intra-group credit from the large exposure limits was not exercised. In this context, authorities noted that the existence of the large exposure rules are based on the general objective of limiting credit risk concentration towards any single borrower or group of related counterparties and are therefore aimed at preventing bank failures resulting from the possible collapse of a major borrower. In addition, the large exposure rules serve as a corrective element to the overall minimum capital requirements of banks which are calculated under the hypothesis of perfectly diversified credit portfolios. Hence, with regard to liquidity risk management the potential advantage from lifting the large exposure rules needs to be carefully weighed against the disadvantage of potentially increasing the concentration risk in banks' credit portfolios.

<sup>44</sup> It should also be noted that, for non-euro area Member States, national liquidity requirements may reflect monetary policy and structurally different domestic financial systems.

potentially more volatile funding sources and increased use of more complex financial instruments with embedded liquidity risks.

#### **SHORTER TIME HORIZON FOR PAYMENT OBLIGATIONS: REAL-TIME SYSTEMS AND INCREASED INTERNATIONALISATION**

One of the critical issues affecting the liquidity risk management of banks is that payment obligations now fall due much quicker than in the past. This shortening time horizon of liquidity risk management was striking in the contacts with some large cross-border banks which referred to intra-day as short-term, overnight as medium-term and one week as long-term time horizons. These time horizons are at the short end of the spectrum considered by banking supervisors<sup>45</sup> and are considerably shorter than the time horizons of one week or one month traditionally used in many of the quantitative liquidity requirements.

This shortening of the time horizon for liquidity management may be considered the outcome of two broad trends: first, the widespread use of real-time systems, such as real-time gross settlement (RTGS) systems;<sup>46</sup> and second, the increased internationalisation of banking, with large cross-border banks participating in different jurisdictions and dealing with different currencies. These developments also increase the complexity and time-criticality of liquidity risk management by concentrating the liquidity demands on certain high-flow payment days or at critical times during the day, when a system requires payments to settle.

Current international financial transactions, whether settled in RTGS systems, in netting systems with specific payment times or with payment-versus-payment procedures, require payments to be made at the right time, in the right currency and in the right system. Together with systems linking the international financial system (e.g. cross-border systems like TARGET<sup>47</sup> and cross-currency systems like CLS),<sup>48</sup> they have increasingly hard-wired

the world's payment, clearing and settlement systems together.

In addition to real-time systems, the shortening of the time horizon is also related to the fact that in recent years, cross-border banking groups have increased their international reach and business activities in different jurisdictions and in multiple currencies which poses significant challenges for liquidity risk management.

#### **DEVELOPMENTS IN THE FUNDING STRUCTURE OF EU BANKS<sup>49</sup>**

Although decreasing slightly in importance, customer deposits remained the main source of finance in a number of countries in the EU, as can be observed in Chart 11.

However, the long-term trend in household portfolios shows a shift away from the historically stable bank deposits towards investment funds, pension funds and insurance companies.<sup>50</sup> This shift is also fostered by the

45 Basel Committee on Banking Supervision, The Joint Forum, *The management of liquidity risk in financial groups*, Basel, May (2006).

46 A real-time gross settlement (RTGS) system is a settlement system in which processing and settlement take place on an order-by-order basis (without netting) in real time (continuously). See ECB, *The implementation of monetary policy in the euro area – General documentation on Eurosystem monetary policy instruments and procedures*, September 2006.

47 Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET). TARGET is the RTGS system for the euro, offered by the Eurosystem. It is used for the settlement of central bank operations, large-value euro interbank transfers and other euro payments. It provides real-time processing, settlement in central bank money and immediate finality. See ECB, *The implementation of monetary policy in the euro area – General documentation on Eurosystem monetary policy instruments and procedures*, September 2006.

48 Continuous Linked Securities (CLS) is a system designed for the settlement of foreign exchange (FX) transactions. CLS largely eliminates FX settlement risk by settling FX transactions in its books on a payment-versus-payment (PvP) basis. The remaining balances of CLS settlement members on the books of CLS Bank (CLSB) are squared by pay-ins and pay-outs in central bank money for each of the eligible currencies. See ECB, *The implementation of monetary policy in the euro area – General documentation on Eurosystem monetary policy instruments and procedures*, September 2006.

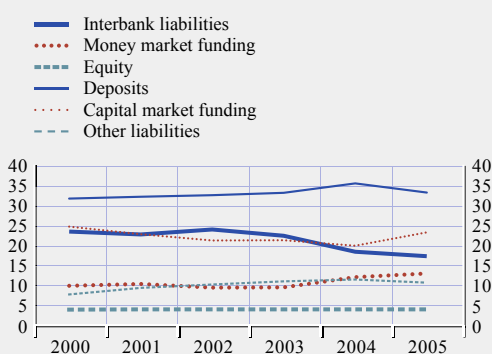
49 European Central Bank, *EU Banking Structures*, October (2006)

50 OECD, *Ageing and pension system reform: implications for financial markets and economic policies*, Paris (2005).



**Chart 11 European banks' liabilities, including gross interbank liabilities**

(in percentage)



Source: Bankscope; EU Banking Structures, ECB, 2006

use of electronic means. Indeed, internet banking and increased competition from other financial intermediaries may have contributed to making retail deposits more footloose and volatile.<sup>51</sup>

For many banks the growth rate of deposits is not keeping up with that of loans, leading them to resort to alternative funding channels.<sup>52</sup> Both the Joint Forum<sup>53</sup> and the ECB<sup>54</sup> report the move towards more volatile funding sources, such as wholesale funds, brokered certificates of deposit and internet banking, which are more complex to manage with regard to their liquidity risk.

The funding sources of cross-border EU banks have changed markedly in recent years, with increased use of wholesale funding and new funding instruments, such as securitisation, covered bonds and asset-backed financial instruments.<sup>55</sup> Interbank lending, whilst enhancing the incentives for market monitoring among banks, can contribute to additional contagion risk. Apart from the increased cost of funding, money market instruments are more volatile and may require changes and increase the complexity of liquidity risk management. Indeed, some of the new instruments include off-balance sheet obligations and embedded options, which could in some circumstances

increase price volatility and liquidity risk, perhaps quite markedly.

Especially in many of the NMS, due to their high share of foreign-owned banks, parent financing remained an important source of funding. This has increased the internationalisation of funding, providing a more stable and long-term financing option.

The use of covered bonds is still rather limited with the most common form being the mortgage covered bonds that are mainly used for managing liquidity under normal conditions. These types of bonds are collateralised by the designated assets, where the bondholders are granted bankruptcy rights based on specific legislation. The use and relevance of these bonds is steadily increasing, especially in the EU15.

In many countries asset securitisation is more widely used than covered bonds. Asset securitisation may be used for both funding and for capital adequacy reasons as it may allow, under certain conditions, banks to sell their exposure, thus reducing regulatory capital requirements.<sup>56</sup> In contrast to covered bonds, banks also use such assets to manage their credit risk exposure (thus increasing or reducing their exposure as needed). Various countries use this form of financing, albeit to a varying degree, and benefit from the higher credit rating resulting from the partitioning of assets in different risk categories. Overall, recourse to securitisation in many of the NMS remains

51 More information can also be found in section 3.3 of this report.

52 This is of particular importance in the banking sectors of the NMS, where loan to deposit ratios have been increasing sharply.

53 Basel Committee on Banking Supervision, The Joint Forum, *The management of liquidity risk in financial groups*, Basel, May (2006).

54 European Central Bank, *EU Banking Structures*, Oct. (2006), and section 3.3 of this report.

55 Namely, asset backed securities (ABS) and asset backed commercial paper programmes (ABCP).

56 With the stricter treatment of securitisations under the CRD, the use of these instruments mainly for regulatory capital purposes may decline over time.

negligible. One of the reasons may be the high transaction costs involved in initiating such a procedure. The replies to the questionnaire highlighted that in the majority of the NMS, banks use neither covered bonds nor asset securitisations for liquidity purposes.

### 2.3.2 CROSS-BORDER POOLING OF LIQUIDITY AND USE OF COLLATERAL

#### RECENT DEVELOPMENTS

The higher degree of internationalisation of cross-border banking groups coupled with the increased interlinkages that currently exist between the various market infrastructures further highlight the issue of whether liquidity can flow freely and speedily, not only on a routine basis but also, and more importantly, in stress situations. In this context, money held with central banks has always been viewed as one of the most secure assets. It is therefore essential that in the case of a crisis liquidity, and in particular liquidity held with central banks, can be moved quickly from one point in the system to another. Given the afore-mentioned developments, payment systems play an important role in the circulation of liquidity.

The introduction of the euro and the establishment of TARGET have been crucial developments in facilitating the cross-border pooling of liquidity in the euro area. It is now possible to move euros much quicker and more reliably across a much wider area than was previously the case under the predecessor currencies. With the introduction of TARGET2, cross-border pooling of liquidity will be made even more convenient for banking groups, as group members in the euro area, which do not have enough funds in their central bank account, can have recourse to excess liquidity of other group members without the need to physically transfer funds between the accounts of the members of the group. This means that balances of all group members, irrespective of the country they are residing in, will be virtually aggregated, as if it were only one account balance. As a consequence, the

pooling of liquidity in the euro area or in euro-denominated transactions does not seem to raise any issue of concern for large cross-border banking groups.

Moving money more speedily and reliably is a development not restricted to the euro; in practice fungible currencies can easily be pooled across borders. Progress in this field has been supported by the development of systems like the CLS and the Scandinavian Cash Pool (SCP). The CLS allows for safer settlement of outright sales and purchases of participating currencies, thereby allowing greater fungibility between liquidity held in different currencies of deep and liquid markets. The SCP allows for intraday credit in one currency based on liquidity held in another currency, thereby facilitating intraday fungibility of liquidity held in the three participating currencies (see Box II). Although having these market infrastructures is certainly crucial for the circulation of liquidity across borders, what underlies the pooling of currencies is the depth and reliability of the market in the major currencies, such as the EUR, GBP and USD. This may lead many banks, if not most banks, to assume that even under crisis situations these markets will continue to function effectively.

The need for cross-border use of collateral is the mirror image of the need for liquidity to flow freely and speedily on a cross-border basis. Structural changes have increased the need for banks to hold high quality collateral. This is partly due to greater transparency, competition and increased focus on risk management in financial markets. In addition, the increased use of repo transactions and derivatives has increased the need for high-quality collateral in the wholesale markets.<sup>57</sup> Furthermore, central counterparty clearing houses (CCPs), which typically rely on collateral to manage counterparty credit risk and liquidity risk between the trading and settlement phases, are broadening their scope. CCPs are increasingly expanding their activities from derivatives and

<sup>57</sup> International Capital Market Association, *European repo market survey*, Oct. (2006).



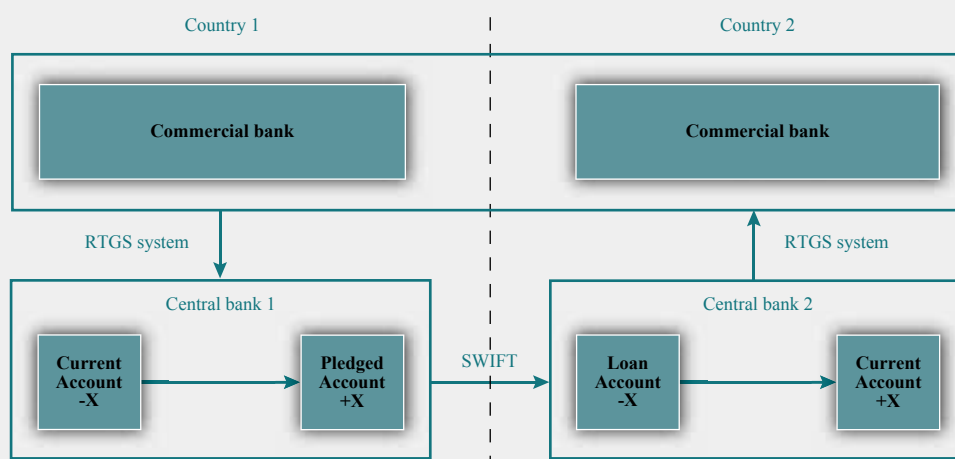
Box 2

THE SCANDINAVIAN CASH POOL<sup>1</sup>

The Scandinavian Cash Pool (SCP) is an automated procedure for cross-border, cross-currency transfers of intra-day liquidity between the RTGS systems of Denmark, Norway and Sweden.

The SCP was implemented in March 2003 in response to the growth of Scandinavian cross-border banks and the need for CLS-participating currencies to have two to three liquidity providers able to supply significant liquidity at short notice.

CROSS-BORDER LIQUIDITY TRANSFER WITH SCP



In the SCP model, as shown above, a bank uses liquidity held in its current account with one central bank (obtained by normal domestic procedures) as pledged collateral to obtain credit in its current account with another central bank. The central bank which extends credit can decide the exchange rate and haircut. The SCP model is automated using existing systems. Banks access the SCP via national RTGS systems and central bank systems communicate via SWIFT. This allows banks to obtain intraday liquidity in another country in 23 seconds.

<sup>1</sup> Further details of the SCP are available on the websites of the participating central banks and in Danmarks Nationalbank (2005), *Payment Systems in Denmark*, Box 5.4.

repurchase transactions into outright securities markets. Therefore, there is now a multitude of competing uses for the collateral holdings of internationally active banks.

In normal times a balance is kept between collateralised and non-collateralised funding. However, if possible, banks increase their use of

collateralised borrowing in times of crisis since it is easier to obtain (as long as the collateral is of sufficiently high quality). At present, scarcity of high quality collateral does not seem to be an issue of concern. However, there may be a need to ensure that collateral will not become scarce in stress situations when secured borrowing is likely to increase.

The increased cross-border use of collateral will mainly support the liquidity risk management of banks that manage their liquidity on a centralised basis with direct access to the various payment and securities settlement systems globally, operating under various jurisdictions and in different currencies. This direct participation in foreign financial markets translates into complex and potentially costly collateral management, and may result in possible collateral mismatches and liquidity shortfalls at the individual institution level, whereas at the group level these shortfalls would not exist.

There are already some arrangements in place which allow some types of cross-border use of collateral within the EU (e.g. the Correspondent Central Banking Model and the links between securities settlement systems, and the Scandinavian Cash Pool<sup>58</sup>) and therefore reduce the need to transfer collateral from one country to the other.<sup>59</sup> The availability of collateral for Eurosystem operations has benefited from the decision of the ECB Governing Council to introduce credit claims as an eligible type of collateral for Eurosystem credit operations as of 1 January 2007, as the use of credit claims will allow the freeing-up of securities for other

purposes.<sup>60</sup> In addition, international central securities depositories (ICSDs), such as Clearstream and Euroclear, with which many central banks also have accounts, are used by some non-Eurosystem central banks in the EU. Furthermore, the Eurosystem is introducing developments to the existing framework that will enhance the current arrangements with regard to the use of collateral across the euro area (see Box III).

### POTENTIAL BARRIERS

The various market infrastructures are indeed a major achievement in interconnecting and allowing the flow of liquidity across borders.<sup>61</sup> However, some obstacles, mainly of an operational nature, have been identified by the large cross-border banks, such as transaction costs, time zone frictions, and divergence in

58 Also includes Norway, which is outside of the EU.

59 For more details, see Bank for International Settlements, Committee on Payment and Settlement Systems, *Cross border collateral arrangement*, (2006).

60 For further information see: European Central Bank. The Single List in the collateral framework of the Eurosystem, *Monthly Bulletin*, May, (2006).

61 The Committee on Payment and Settlement Systems (CPSS) is currently studying the implications of the different interdependencies existing among the payment and settlement systems.

### Box 3

#### TARGET2-SECURITIES

Under current arrangements, European central securities depositories (CSDs) normally settle the central bank money leg of securities transactions that are denominated in euro through the local real-time gross settlement (RTGS) component of the TARGET system. To facilitate this, participants in a CSD (whether direct or indirect participants) must also participate (directly or indirectly) in the national RTGS system of the country where the CSD is located. With the introduction of TARGET2, it will be possible for each participant in TARGET2 to settle transactions effected via any CSD that provides for settlement in central bank money in euro through one single TARGET2 account.

With its single technical platform replacing the multiplicity of platforms of the current TARGET system, TARGET2 has increased the pressure for improving and reducing the cost of settlement of cross-border securities transactions. The new project TARGET2-Securities (T2S) will provide the European securities industry with a single venue (single settlement platform

and standardised communication protocols) where all EU assets can be exchanged for euro, which will help reducing the cost of cross-CSD settlement. It will eliminate financial exposure in cross-CSD settlement through central bank money settlement.

T2S will not replace CSDs, but serve them through a common settlement engine, so that they can deliver a harmonised efficient service to their customers (the market participants). A decentralised structure will be maintained whereby each CSD is responsible for managing its legal and commercial relationships with intermediaries, investors and issuers, as well as custody and asset-servicing activities.

The Eurosystem is working in cooperation with CSDs and users to prepare the T2S User Requirements and to identify the market's preferences in relation to the features of T2S. The implementation of such a facility, which will be owned and operated by the Eurosystem, will potentially bring large cost savings as a result of the high level of efficiency and technical harmonisation that it would entail for market participants, particularly in the field of cross-border business. T2S would represent a major step towards a single Eurosystem interface with the market. In addition, it will facilitate the cross-border management of collateral (by making it effectively domestic) and support pan-European liquidity management. Synergies with other systems operated by the Eurosystem - in particular TARGET2 and CCBM2 - will be exploited.

The primary focus of T2S will be settlement services in euro. However, T2S will be able to provide settlement also in foreign currencies, provided there is an explicit request in this sense by the relevant non-Eurosystem central bank in coordination with the local market community. The project is conducted in full transparency and its governance structure ensures a comprehensive involvement and representation of all interests and stakeholders concerned.

standards between the various systems that, at the margin, prevent efficient pooling of liquidity.

These obstacles may persist. Given the existence of different time zones, there may always be a need to hold liquidity in these different time zones, simply for the normal conduct of business. For transaction costs, economic efficiency may dictate that each system should charge for its own costs. Regarding the divergence in standards, this may prevent banks from accessing liquidity in certain jurisdictions where it is most needed.

Furthermore, while some of the issues raised in the previous paragraph may also apply to transfers between currencies of varying degree of fungibility, it is clear that there is a point when a currency is no longer as deeply traded and, particularly in a stress situation, banks no longer expect to be able to transact across these

currencies. This reduces the ability of private markets to overcome liquidity constraints and could therefore reduce the ability to pool liquidity. The point at which a currency becomes a less fungible currency is, however, not always clear cut.

In addition, different legal and fiscal regimes also appear to be important factors that reduce the ability to pool liquidity. Tax laws increase the cost of certain transactions significantly and may therefore make them less likely to take place. Examples include capital gains tax, where it may be impractical to sell-off assets to generate liquidity, because of the additional tax liabilities this would create. However, such barriers to pooling may also create other wider economic benefits, for example by creating legal certainty and providing consumer protection.

While the barriers to the pooling of liquidity appear to be less of a concern overall, there is

more uncertainty about the extent to which collateral practices and differences in legal systems inhibit the use of collateral on a cross border basis. Indeed, legal constraints on the cross-border use of collateral within the banking group may be quite significant, particularly in the context of financial distress or of a stress situation. A better understanding of the relevant implications of the legal framework affecting the use of collateral within the EU and other major third countries where European cross-border banks are present is crucial in order to assess potential systemic issues.<sup>62</sup>

With regard to the cross-border use of collateral to access central bank money, the variety of current central bank policies and practices among some of the central banks outside the euro area, differences in local rules with regard to procedures and legal frameworks, and the few remaining non-connectivities between systems may prevent the pooling of collateral management at the desired level, especially by large cross-border banks which are direct and active participants in the various local markets.<sup>63</sup> With regard to the eligibility criteria for access to central bank money, there are, for example, differences between the types of collateral acceptable to central banks for the provision of intraday liquidity.<sup>64</sup> These differences are seen by a number of practitioners as an obstacle, although the existence of these differences can also be viewed in terms of different risk appetites by central banks and as such would be in line with the normal functioning of free markets.

Some practitioners have also made the point that it is the absence of private intraday repo systems that creates a barrier to efficient liquidity management, as such systems would enable a market-driven solution regarding the cross-border use of collateral and would therefore reduce the reliance on central bank-driven solutions.

These barriers to the possibility of the use of collateral across borders may be costly for large cross-border banking groups. Indeed, they result

in banks needing to hold sufficient quantities of eligible collateral for payment and settlement purposes in every market in which they operate on a standalone basis. This may increase the amount of collateral they hold overall, compared to a situation where they could easily move the collateral across borders. Furthermore, it poses additional challenges to collateral management as mismatches between the location of the liquidity needs and the collateral held may arise more easily. However, these barriers to the cross-border use of collateral may also mitigate the increased interdependence of certain markets and, hence mitigate potential contagion risk. In addition, the need to hold sufficient quantities of collateral on an individual basis increases the precautionary collateral holdings in each market and therefore increases the bank's ability to quickly obtain credit in an emergency. Nevertheless, some central banks note that the emergency use of cross-border collateral has the potential to promote financial stability during a crisis.<sup>65</sup>

## 2.4 THE LIQUIDITY RISK MANAGEMENT OF BANKS

### 2.4.1 STRUCTURE AND GOVERNANCE OF LIQUIDITY RISK MANAGEMENT IN BANKS - THE ROLE OF ALCO AND ALM

The main body responsible for monitoring, decision-making regarding the strategic aspects of liquidity management of banks, as well as

<sup>62</sup> In this context, the positive effects that the adoption of the Financial Collateral Arrangements Directive (2002/47/EC) has had for the provision of cross-border collateral within the EU should be noted. See also the EU Commission's Evaluation Report of 20 December (COM (2006) 833).

<sup>63</sup> The desired degree of centralisation of liquidity and collateral management depends on several factors such as cost-efficiency, the chosen business model, size, local regulatory and legal factors, and the sophistication of the IT platform.

<sup>64</sup> For instance, some central banks only accept collateral denominated in a certain currency, others do not accept credit claims.

<sup>65</sup> Bank for International Settlements, Committee on Payment and Settlement Systems, *Cross border collateral arrangement*, (2006).

the setting of limits and approval of policies for liquidity risk management, is the Board of Directors. The main formal structures responsible for asset and liability management in banks are the Asset and Liability Management Committee (ALCO) and the Asset and Liability Management (ALM) unit.

In more than half of the banks surveyed, the ALCO was reported by the authorities as being responsible for the strategic aspects of liquidity management (on some occasions, this role can be undertaken directly by the Board of Directors). The ALCO normally reports directly to the Board of Directors, is usually composed by the heads of the relevant departments,<sup>66</sup> and is chaired by a member of the Board. This structure is often present in the foreign offices, with local or regional ALCOs that monitor liquidity risk at the subsidiary/business level. For several years now, the responsibility of the ALCO has been growing, from a simple monitoring function to an effective risk management function. Among its tasks related to liquidity issues, the ALCO monitors the liquidity position of the group, analyses and validates the risk measures and the limits set by the ALM unit, approves the main orientations and decides on mitigating actions. It is finally responsible for proposing the global liquidity management frameworks for the group.

The ALM unit, which is overseen by the ALCO, is mainly responsible for measuring and analysing the risks driven by the intermediation business as well as defining the related mitigating actions. For internationally active banking groups, the ALM unit has decentralised local units in the foreign offices which are mainly responsible for producing indicators, managing local liquidity positions and ensuring compliance with the local regulatory ratios.

#### **2.4.2 INTERNAL ORGANISATION OF LIQUIDITY RISK MANAGEMENT - CENTRALISATION VS. DECENTRALISATION**

Bank practices differ with regard to the degree of centralisation of liquidity management,

demonstrating that the optimal choice depends on the banks' business and structure.

On one hand, banking groups centralise liquidity management at the group level to have a better overview, thus allowing them to better manage and place liquidity where it is needed. Centralisation can also allow for a more efficient management of the banking groups' financing requirements and may lead to economies of scale, achieved through: (i) streamlining management and committees for liquidity administration; (ii) holding less costly liquidity reserves, since the amount of aggregate liquidity reserves may be less than the sum of reserves held in each individual entity and (iii) less expensive funding of liquidity, given that the rating of the parent is usually higher than that of the subsidiaries. In addition, the crisis management function tends to be centralised and in some cases liquidity is provided to the overall banking group in stressed situations via the parent.

On the other hand, decentralisation often occurs for operations where local experts are responsible for the management of their own liquidity. Banks decentralise these functions to shift responsibility to the local operations. This leads to more active engagement of the local institutions and might reduce the risk that the parent company is automatically seen as a lender of last resort. For some banks, an important reason for decentralisation is to mitigate the complexities of transferring funds and collateral between different entities that are operating in different currencies. Some banks also mention that barriers to the transfer of funds and collateral imply that it can be beneficial to hold a certain amount of liquidity locally, e.g. legal constraints to liquidity flows aimed at reducing contagion risks in times of stress. Furthermore, the liquidity risk incurred by holding certain "soft" currencies can be better addressed within the confines of the respective jurisdiction. Finally, the fulfilment of minimum reserve requirements is also a local

<sup>66</sup> For instance, the chief risk officer, the chief financial officer and the head of asset and liability management.

issue. Therefore liquidity risk management is often organised by geographic region and/or currency.

Hence, although supervision of branch liquidity remains with the host-country authority and the current regulatory framework is fragmented between jurisdictions, these do not seem to be the reasons why the liquidity management of banks is often decentralised. Instead, the decision on whether or not to centralise liquidity management is determined by the banking groups' business model and the jurisdictions in which it operates. The majority of banks have chosen to centralise the overall liquidity policies, principles and limits, and decentralise the responsibility for the day-to-day management of liquidity, which has to be in accordance with the policies, principles and limits set centrally. More than two thirds of the authorities reported such an organisational structure.<sup>67</sup>

#### 2.4.3 QUANTITATIVE MODELS AND APPROACHES

##### INTERNAL LIQUIDITY RISK MODELS

For the purposes of measuring and managing liquidity risk on a going concern basis, the vast majority of banks use approaches based on the estimation of future cash flows for different maturities, normally referred to as gap analysis or maturity-mismatch. When managing and quantifying future liquidity needs on a going concern basis, all banks surveyed use both contractual and behavioural maturities. For the latter, the approaches used rely on historical data and on the expertise built up through managing the business. Normally, banks incorporate into their internal liquidity risk models two distinct time horizons: shorter-term market liquidity focused on immediate funding needs, normally defined from one week up to one year; and longer-term structural liquidity related to strategic business choices with regard to asset and liability management. It should be noted, however, that the large cross-border banks contacted directly conveyed much shorter time horizons (i.e. intra-day for short term and

one week for long term) than the time horizons mentioned in the replies to the questionnaire.

Furthermore, with regard to off-balance sheet items, most banks take into account in their internal risk model the potential liquidity drain from their off-balance sheet business, such as derivatives exposures, underutilised commitments, guarantees and margin calls. Certain smaller banks or banks with limited derivatives business stated that some off-balance sheet items are not included in their internal risk management models.

With only few exceptions, the banks surveyed distinguish between different currencies in their risk management models. The importance of managing different currencies for liquidity purposes naturally increases with the volume of business a bank has outside the euro area. The management principles are in general the same for all currencies, but the special features of local markets have to be taken into consideration, such as an assessment of the fungibility and depth of the foreign currency market and the potential for market-related disturbances or political events.

More sophisticated quantitative models for measuring and managing liquidity risk comparable to the ones used for measuring and managing market risk models, such as liquidity-at-risk (LaR) models,<sup>68</sup> do not seem to be widely used at present. In fact, only few large banks use or are in the process of developing LaR models.

<sup>67</sup> Noteworthy exceptions were conveyed by authorities in two countries. One country reported the existence of banks in their jurisdiction that have adopted the greatest degree of centralisation of liquidity management, with central management controlling not only the policies and crisis liquidity management but also day-to-day liquidity management. The other country reported the existence of banks managing liquidity on a purely decentralised basis (this occurs since these institutions manage risk on an unconsolidated basis).

<sup>68</sup> Liquidity-at-risk (LaR) models is used here to refer to statistical models analogous to value-at-risk models, which estimate on an empirical basis future liquidity needs, or more precisely the probability that a certain liquidity reserve will or will not be sufficient within a given period of time based on historical data.



The issue of how to approve the suitability of internal liquidity risk models for fulfilling prudential requirements is currently a prominent issue for the supervisors of banks using more advanced liquidity risk approaches for their internal evaluations and risk management purposes. These banks argue that such approaches provide more value added than the regulatory liquidity ratios. However, at present, only a limited number of authorities would consider the possibility of approving the use of internal liquidity risk management models for supervisory purposes.

Internal liquidity risk models are part of a more comprehensive liquidity risk management; hence the process for their "validation" would also depend on other complementary characteristics of the overall liquidity risk management procedure in place within the banking group. This could possibly pose challenges to the current responsibility of the host-country authority for liquidity supervision. Indeed, the policies and procedures in place for liquidity risk management for the whole banking group are dictated and controlled by the parent, which is subject to home-country supervision.

### STRESS TESTING AND CONTINGENCY PLANNING

With regard to internal liquidity risk management, all banks surveyed distinguished between going concern basis and stress situations. With regard to the models used, a clear distinction is made by banks between liquidity management on a day-to-day or regular basis and liquidity management in a crisis. In the former, historical data is normally used to forecast future funding needs with a certain degree of confidence, and the quantitative parameters used reflect trends expected by the bank. With regard to the latter, stress tests<sup>69</sup> are associated with forward looking scenarios which simulate abnormal market periods and that are often not reflected in the historical data of the institution.<sup>70</sup> This lack of data and the unpredictable nature of counterparty behaviour create difficult challenges in simulating such scenarios.

Overall, the surveyed banks performed stress tests of their liquidity risk and have contingency funding plans in place.

With regard to the scenarios, it should be noted that there are many broad similarities in the scenarios of stress used by the banks. For example most banks distinguish between systemic or market crises and institution-specific crises. With regard to the former, a mild recession or a political event are mentioned. Concerning the latter, the most common scenarios, with varying degrees of severity, include cuts in access to unsecured funding, reduced access to new secured funding or a ratings downgrade.

With regard to accessing funding in crisis situations, most banks have a contingency funding plan in place, with alternative sources of funding that could be tapped to access further liquidity, depending on the severity of the liquidity crisis. Stress testing is an important element in sound risk management and contingency planning, as the stress scenarios can highlight potential problems, and raise awareness of the cost of forced liquidation of assets. Ultimately, stress testing should prove to be a useful tool in the prevention of liquidity crises as it improves planning.

From 1 January 2007, in accordance with the regulatory framework of the CRD,<sup>71</sup> these

<sup>69</sup> Generally stress tests include sensitivity and scenario tests. Sensitivity tests are normally uni-variant tests, whilst scenario tests are normally integrated, multi-variant tests for different scenarios which have an increasing degree of severity and which normally take into account the relationships between the variables. The main difference between sensitivity analysis and stress testing is that the former tests one variable, other things being equal, while the latter takes into account interdependencies between variables.

<sup>70</sup> Although for certain liquidity stress tests or particular aspects of stress tests, previous experiences or stress events are employed (e.g. 9/11), the incorporation of historical data in liquidity stress tests is still limited.

<sup>71</sup> The CRD states with regard to liquidity risk: "Policies and processes for the measurement and management of their net funding position and requirements on an ongoing basis and forward-looking basis shall exist. Alternative scenarios shall be considered and the assumptions underpinning decisions concerning the net funding position shall be reviewed regularly" and "Contingency plans to deal with liquidity crises shall be in place", (Annex V, No. 10).



elements will need to be in place and will be reviewed and evaluated by the competent authorities. Hence, the implementation of the CRD provisions for stress testing should initiate a constructive dialogue between supervisors and banks relating to assumptions, methodology and validation that is expected to contribute to the refinement of existing practices and the increased use of stress tests in the overall liquidity risk management of banks.

## 2.5 MAIN FINDINGS AND CONCLUSIONS

Based on the analysis of the questionnaire and on the contacts with the banks, the following main findings and conclusions were reached:

### REGULATORY FRAMEWORK

In the EU, almost all countries apply explicit liquidity risk requirements on banks, in some form of regulation or monitoring by authorities, but the approaches vary widely among Member States. Although liquidity risk management takes place in a rather fragmented regulatory environment, liquidity risk regulation is not perceived as imposing undue restrictions on the cross-border management of intra-group liquidity. Indeed, banks do not seem to contest the need to have requirements for the supervision of liquidity risk in place per se, but the large cross-border banks in particular would like to see a concerted approach taken by supervisors within a banking group.

The most frequently mentioned obstacle was the home/host arrangements for liquidity risk supervision. Large cross-border banks would like to see host-country supervisors relying on home-country supervision for their branches provided that sound group-wide liquidity risk management practices are in place, as confirmed by the home-country supervisor. In this context, some authorities have already found practical ways to reduce the inefficiencies of the existing regulatory framework for banks with major international activities by putting in place bilateral agreements and regulation (i.e. less stringent supervision of branches, conditional

exemptions or delegation of supervisory powers to the home supervisor), which allows the division between the home/host to be overcome in the case of EU branches.

Banks also pointed out the existence of other rules not pertaining to liquidity regulation that create potential regulatory obstacles to efficient liquidity risk management, notably the large exposures limits.<sup>72</sup> In this regard, the desire of banks to lift limits on intra-group flows is understandable, as it enhances efficiency in liquidity reserves management, increases transparency and provides for a more inclusive approach. However, lifting such limits could have financial stability implications that need to be taken into account, such as the potential for excessive concentration of exposures which may result in a significant risk of loss (ultimately leading to insolvency) and the potential to increase the risk of contagion across financial systems. The European Commission is currently reviewing these rules with the assistance of the CEBS.

### STRUCTURAL DEVELOPMENTS

Liquidity risk management varies between countries and between banks within each country which tailor liquidity management to their specific needs. However, despite differences in management practices, the challenges regarding liquidity management have changed in similar ways: time horizons for payment obligations have shortened in modern settlement systems, as business is carried out increasingly on a real-time basis and across the globe, funding sources have become more market-based and potentially more volatile, and banks use a wider range of financial instruments with embedded liquidity risks that pose additional challenges for liquidity risk management. The EU money market is highly concentrated across all funding instruments

<sup>72</sup> It should be noted that the replies of the banking industry suggesting a need for a free flow of liquidity across borders does not take into account the need to protect consumers/depositors in specific countries and hence should be analysed also within a wider context of crisis management issues that is outside the scope of this report.

(unsecured, secured and derivatives). The largest players also hold large shares of interbank assets and liabilities. Furthermore, cross-border banks are increasingly in need of high quality collateral, with a multitude of competing uses for the collateral holdings ranging from accessing central bank money to operating in wholesale markets that have increasing collateral requirements. These trends increase time-criticality with regard to liquidity risk management (with certain hours of the day or days of the week being particularly crucial) and, in certain situations, may lead to a substitution of credit risk by liquidity risk within a banking group.

These structural and market developments may call for a review of the current rationale for liquidity risk regulation in the light of the fact that today, more than in the past, the stability of internationally active banks depends increasingly on timely flows of liquidity across borders.

From a financial stability perspective, these developments encourage better and sounder risk management practices, thus decreasing the severity of putting banks in a better position to deal with a liquidity event. At the same time, given the increased complexity of and interconnectivity between financial systems, they may contribute to increasing the severity of a liquidity event.

#### **POOLING OF LIQUIDITY AND CROSS-BORDER USE OF COLLATERAL**

On the cross-border pooling of liquidity, the various existing market infrastructures have made the financial systems significantly more interconnected, permitting a better flow of liquidity across borders. However, banks still referred to the existence of obstacles such as transaction costs, different time and currency zones, and divergence in standards of access to central bank money (outside the euro area).

The need for high quality collateral has increased substantially in the recent years, to access central bank money and for funding

in the wholesale markets. The current view among authorities is that high quality collateral is not scarce but may need to be monitored as structural changes are increasing the need for it. Furthermore, there may be a need to ensure that collateral will not become scarce in stress situations, when secured borrowing is likely to increase.

Although most cross-border banks express the desire to manage collateral centrally, it is normally managed locally throughout the banking group mainly due to barriers to cross-border use. The need to manage collateral in several markets is costly and inefficient for the banking groups, mainly for those that are direct and active players in the various local markets. Barriers to the cross-border use of collateral referred to by banks relate mainly to issues outside the euro area and include the differences in current central bank policies and practices, the non-connectivity between payment and securities settlement systems, the use of different currencies with varying degrees of fungibility and legal issues. With regard to the latter, a better understanding of the relevant implications of the legal framework affecting the use of collateral within the EU and other major third countries where European cross-border banks are present is important. Regarding the different central bank standards, it should be noted that these differences could largely be based on different risk appetites that are in line with the normal functioning of free markets.

From a financial stability perspective, the potential improvement in the efficiency of the liquidity risk management of banks from the lifting of technical barriers (if any) is supported. However, it is important to understand the underlying rationale for the existence of other barriers that are not of a mere technical nature (e.g. legal or prudential). The potential increase in contagion risk and reduction in the ability of a bank to quickly obtain liquidity locally in an emergency would also need to be taken into account.

## INTERNAL CORPORATE GOVERNANCE AND THE ORGANISATION OF LIQUIDITY RISK MANAGEMENT

The main formal structures responsible for asset and liability management in banks are the Asset and Liability Management Committee (ALCO) and the Asset and Liability Management (ALM) unit. Despite the specific structure, what is important, from a financial stability perspective, is the involvement of the Board of Directors regarding monitoring, strategic decisions concerning liquidity management, and the setting of limits and approval of policies for liquidity risk management.

The arguments in favour of centralising or decentralising liquidity management in banking groups are manifold. The practices of banks differ with regard to the degree of centralisation, the optimal choice depending on their characteristics. Nevertheless, the general trend is towards the centralisation of liquidity management policies and procedures and the decentralisation of routine liquidity management. Holding and managing liquidity locally may be particularly important from a financial stability perspective if dealing with soft currencies or if an emergency situation arises.

## INTERNAL LIQUIDITY RISK MODELS AND STRESS TESTING PROCEDURES

Banks with more sophisticated risk management approaches in place, believe that regulatory quantitative liquidity ratios are lagging with respect to their own approaches in terms of information content. More generally, large cross-border banking groups state that liquidity risk management practices should always be tailored to the individual banking group's needs and that this should be adequately reflected in liquidity regulation. In this regard, there seems to be a clear divergence between the larger banks which have more sophisticated risk management systems in place and would like to use their own internal models also for regulatory purposes, and other less sophisticated banks which use, and intend to continue using, the more standard regulatory liquidity ratios also for internal management purposes.

The more sophisticated internal liquidity risk models (e.g. LaR models) do not seem to be a common practice. However, an increasing number of large banks are developing such models for use in internal risk management. These approaches pose additional challenges for banking supervisors, given their subjectivity and the difficulty in setting common quantitative criteria. Further work is needed with regard to the internal model methodologies to ascertain their benefits and limitations.<sup>73</sup> As techniques are continuously developing, supervisors should monitor this development on a country-by-country basis very closely.

With regard to stress tests and contingency planning, further work in this area could focus on the specific models and parameters used by banks with regard to their stress testing models and the stress levels used in their contingency funding plans. In this context, it should be noted that potential future validation of liquidity risk models is much more challenging than the validation of credit or market risk models, in particular because of data limitations and the difficulties of predicting future counterparty behaviour in times of stress.

<sup>73</sup> In this context, future work on liquidity risk could envisage retrieving comprehensive and detailed information on the specific models used by those institutions which are more advanced in the development of their internal models. This would be especially relevant if national authorities consider replacing the current supervisory liquidity ratios with a set of requirements determined on the basis of such models. In this context it should be noted that the BCBS and the CEBS (GdC) are already looking into this subject.

## 3 DISTRIBUTION CHANNELS IN RETAIL BANKING

Retail financial services have attracted a great deal of attention in recent years. In the White paper on Financial Services 2005 - 2010 the Commission identified retail financial services as one of the areas that required new initiatives which would bring benefits in terms of financial integration and thus promote the EU economy. The Green Paper on Retail Financial Services in the Single Market, published in April 2007, acknowledges the significance of retail financial services, with retail banking constituting over half of the total banking activity and generating 2% of EU GDP annually in gross income. However, it also states that integration in retail financial services does not yet appear to have reached its potential, naming retail banking among the areas in which consumers are not fully benefiting from the establishment of the single market.

The development of distribution channels other than branches and ATMs, which mostly provide services at a local level, and the greater familiarisation of consumers with new types of distribution channel are considered important for the furthering of market integration. Against this backdrop, this chapter portrays the evolution of the different distribution channels used by banks and discusses the related financial stability considerations.

The findings of this chapter draw mainly on the replies provided by central banks and supervisory authorities to a related questionnaire and on available literature on the topic. The chapter is organised as follows: Section 3.1 presents the distribution channels operated by the banks themselves, broken down into channels with physical presence (i.e. branches and ATMs) and electronic distribution channels (focusing on internet banking, mobile phone banking and telephone banking). Section 3.2 focuses on the cooperation of banks with non-banks and Section 3.3 discusses financial stability considerations. The report does not cover the issue of mobile distribution channels (e.g. mobile branches) as this was not considered particularly relevant in the EU context.

### 3.1 DISTRIBUTION CHANNELS OPERATED BY THE BANKS

#### 3.1.1 CHANNELS WITH PHYSICAL PRESENCE

##### BRANCHES

Branches are the traditional distribution channel employed by banks. From an organisational point of view, branches could be defined as bank units having no legally independent personality, established at a fixed location and operated by the bank's own staff. In this context, these units have to be distinguished from other forms of retail distribution channels, which have a different legal form and, in some cases, a different type of direct contact with clients, such as financial companies and bank agents and brokers that are presented in Section 3.2.

For all universal EU retail banks, with the exception of internet-only banks, establishing a branch network is pivotal to gaining access and maintaining proximity to clients. Branches form the basis of relationship banking, which is characterised by close and stable ties between the bank and its customers. However, in previous years banks in many countries took steps to cut their branch networks. In part, this was due to increased competition, which led to cost-cutting programs, that reduced the number of branches and replaced them with other distribution channels viewed as less costly alternatives. This trend was also fuelled by M&A activity, which resulted in the overrepresentation of certain banks in certain locations. However, there is literature suggesting that banks which cut down the number of branches were negatively affected by the loss of customers.<sup>74</sup> Therefore many banks seem to be increasingly relying on branches, that have been clearly restructured in accordance with their typical strengths in order to target their customers' needs.

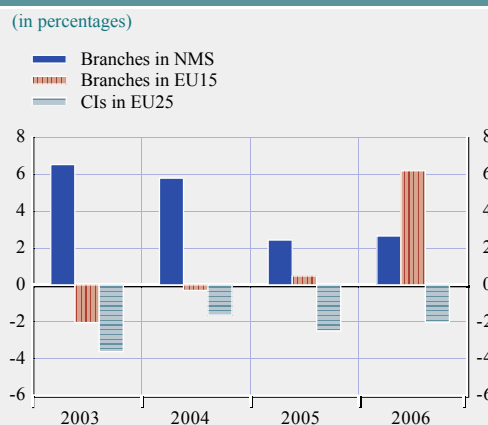
<sup>74</sup> See the Eurogroup Consulting study "La banque de détail aux Etats-Unis et en Europe" published in French *La Tribune* on 13 October 2005. It found that commercial banks and savings banks in Spain followed different strategies with regard to the number of branches, with the result that savings banks gained market share between 1998 and 2002.

Chart 12 shows that the growth rate of branches in the NMS has declined but remains positive and above 2% for the past two years. In the EU15 the negative growth rate of branches was reversed in 2005, although the significant increase observed in 2006 was attributed to the establishment of Banque Postale in FR. The above indicates that the reduction in the number of branches seems to have come at least to a standstill.

However, the number of branches alone is not very informative, as it does not give any indication of their size, activities, equipment and effectiveness of individual branches. Despite expectations that the size of branches would be smaller and their focus would be on sales and advisory services,<sup>75</sup> the majority of the respondents stated that the size of branches remained stable or even increased, whereas only EE, PL and LV reported a decrease in the size of branches. On the other hand, the widespread use of electronic banking channels and self-service devices for routine transactions in all EU25 has, in many cases, led to a changing branch profile. Today banks regard their branches as distinctive points of sale. This has led to a two-pronged approach: more simple, standardised products and transaction banking are offered through electronic means and ATMs, while more complex products are offered in branches. Thus, the enhancement of the sales skills of branch staff is considered an important issue by banks, as more complex or tailored banking products usually have much higher profit margins and contribute significantly to bank earnings. Moreover, proper training is of pivotal importance, as the marketing of such complex products requires expert knowledge and could expose banks to legal risk.

With regard to the range of products offered in branches, it appears that in some countries bank branches tend to be specialised, while other countries reported branches offering a wider range of products. Moreover, certain countries reported the existence of branches targeting special client groups, such as those with higher income, immigrants or small and medium-sized enterprises (SMEs).

**Chart 12 Growth rates of CIs and branches**



Source: ECB, Annex 1

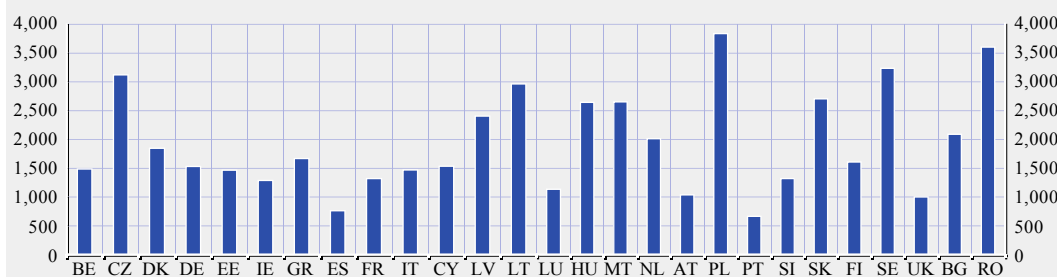
Finally, many countries noted the emergence of more modern style branches, often referred to as “bank shops” and differing from the traditional branches in terms of equipment, location, opening hours and degree of specialisation.<sup>76</sup> However, information on the trends towards this new type of distribution channel varies, with some countries reporting that it is less important or even experiencing a decline, while others are observing a rising trend. All in all, responses seem to indicate that such modern style branches are still at a very early stage of development and are not yet a common EU-wide trend.

Regarding expectations for the future, it is acknowledged that banks value personal contact with their regular customers, which gives them the opportunity to sell high margin products that make a significant contribution to their earnings. At this stage, there is evidence that banks also see this as a

<sup>75</sup> According to the European Financial Management and Marketing Association (EFMA) Banking Advisory Committee “(its) members envisage an increasing number of smaller outlets, kiosks or sales outlets of less than 300 square metres in some cases, which will be located in areas of high customer traffic”. For more information, see EFMA Banking Advisory Committee in partnership with Microsoft, (2006), *The Future of Multi-Channel Delivery*.

<sup>76</sup> As there is no precise definition of “bank shops” and thus no available statistics, the information on trends concerning this specific type of branch need to be treated with caution.

Chart 13 Inhabitants per ATM in 2006



Source: Computations based on the ECB Blue Book and Annex 1.

valid strategy for the future too. However, it is crucial for banks to adapt their advisory services, technical equipment and product mix in line with possible changes in customer behaviour and the competitive environment.

#### AUTOMATED TELLER MACHINES (ATMs)

Traditional branches are often equipped with automated teller machines (ATMs), which may also be used by clients of other banks. ATMs allow holders of current accounts to withdraw money, mainly in their home country but also abroad, offering a 24-hour service. ATMs can also be found away from branches, most often in locations where the customer traffic is high but the operation of a branch is not profitable. The rationale behind ATMs is not only to provide time-flexible cash services, but also to generate fees and to alleviate branches of routine and costly cash services.

Like branches, ATMs are not a new distribution channel, but their development is still quite varied across the EU. The survey showed that - with the exception of only one country - ATM networks have expanded to a greater or lesser degree throughout the EU. In the NMS in particular, the number of ATMs has risen significantly, with the newest EU members, Bulgaria and Romania, at the top. As a structural indicator, the density of ATM networks - measured by the number of inhabitants per ATM - gives some insight into the countries where banks have already built up close-meshed networks and others where

there could be some additional scope for further expansion. In fact, this indicator varies from 663 in Portugal to 3,837 in Poland. As Chart 13 shows, it is mainly the NMS that still have less dense ATM networks.

With regard to special services offered by ATMs in addition to money withdrawals, most countries reported the possibility of checking current account balances and printing statements, followed by payment of services and/or of bills<sup>77</sup> and making money transfers. A few countries mentioned additional services, such as paying taxes or fines, making donations, changing PIN codes and ordering cheque books or other documents. Two countries mentioned the existence of ATMs with the option to withdraw money in foreign currency (US-dollar or euro). Offering all these banking services at ATMs has the effect of shifting such routine transactions from costly branch staff, allowing them to focus more on sales or customer advice. However, with the increasingly widespread use of internet banking and its extended facilities, the development of additional banking services at ATMs could slow down and services currently on offer at ATMs could become less important.

Recent developments show that ATMs can also be used for the distribution of non-banking services. Almost two-thirds of all EU countries reported the existence of ATMs which offer

<sup>77</sup> Sometimes limited to certain creditors.



topping-up services for prepaid mobile phones. While this service already seems to be widespread at the ATMs of EU banks, only two countries mentioned the existence of other non-banking services, namely the printing of gift vouchers and the sale of tickets for concerts and other forms of entertainment. As a result, the use of ATMs to offer non-bank services is (with the exception of mobile phone services) not yet a widely observed phenomenon in the EU. Nevertheless, there is some evidence, such as the recent roll-out of multi-service ATM kiosks in the UK, that such services could play a more prominent role in the future by realising the sales potential offered by the connection between ATMs and bank accounts.

### 3.1.2 ELECTRONIC DISTRIBUTION CHANNELS

Electronic banking (e-banking) is an umbrella term for the process whereby consumers may handle their banking business electronically, without visiting a bricks-and-mortar institution. Electronic distribution channels can be used for both providing information and transaction services<sup>78</sup> as well as for promoting sales.<sup>79</sup>

The term electronic banking was originally used mainly in the context of automation of transaction services, but now the term is also used for buying and selling financial instruments via an electronic channel. Electronic distribution channels are usually divided into internet, telephone, and fax banking.<sup>80</sup>

#### INTERNET BANKING

Internet banking refers to banking activities which are conducted by means of a PC, using the internet as the delivery channel. For private banking customers the most popular form of internet banking is the use of a web browser software<sup>81</sup> to access their accounts, often called online banking or browser-based internet banking. Another form of internet banking uses the home-banking software of the bank instead of the web browser software to perform banking transactions.

Internet banking is the fastest growing electronic distribution channel for banks. The majority of

large European banks offer internet banking to their clients. However, the forms vary depending on the wider strategy of the bank, for instance addressing the needs of mainly existing clients and/or entering new markets.

Almost all banks offer internet banking at least as a service channel in line with their multi-channel strategy, i.e. their clients can use internet banking for information and transaction services.<sup>82</sup> In recent years an increasing number of banks have started enabling their clients to purchase some products online, such as savings accounts, consumer credit, mortgages and bank cards, via the bank's existing website. Different incentives for purchasing and managing products online may include:

- offering the same products and services that can be ordered in a branch, but with better interest rates or lower fees (possibly with a non-recurring online bonus) when ordering and managing them online or via telephone;
- offering internet-only products that are not available in branches; and
- making transactions easier, as clients do not need to visit a branch or restrict themselves to banking hours in order to interact with their bank.

<sup>78</sup> Information services include checking account balances and (securities) deposits, printing statements, gathering information on stock indices etc., while transaction services include, for example, transferring funds and paying bills.

<sup>79</sup> "Sales" includes purchasing (or applying for) financial instruments, such as savings accounts, consumer credit, mortgages, bank cards and securities. In the case of ordering and selling securities as well as managing the securities deposit online, the term "internet brokerage" (or "online brokerage") is often used instead of "internet banking". In this report internet brokerage is not discussed in detail.

<sup>80</sup> TV-banking could be also seen as an electronic distribution channel, but is not discussed in this chapter, as it was not considered to be a significant distribution channel for EU banks.

<sup>81</sup> Software that runs internet banking applications on the bank's WWW server

<sup>82</sup> Sometimes called "core internet banking"; for transaction services customers have to sign an internet banking agreement to make their (existing) current accounts usable for internet banking services.

Table 2 Use of internet banking

(percentages)				
	2003	2004	2005	2006
European Union (25)	:	18	19	22
European Union (15)	19	22	22	24
Belgium	:	:	23	28
Czech Republic	3	5	5	10
Denmark	38	45	49	57
Germany	21	26	:	32
Estonia	:	35	45	48
Ireland	8	10	13	21
Greece	1	1	1	2
Spain	10	12	14	15
France	:	:	:	18
Italy	:	:	8	9
Cyprus	:	4	6	6
Latvia	:	12	16	22
Lithuania	3	7	10	15
Luxembourg	23	35	37	41
Hungary	:	3	6	8
Malta	:	:	:	16
Netherlands	:	:	50	59
Austria	13	18	22	27
Poland	:	4	6	9
Portugal	6	8	8	10
Slovenia	:	9	12	16
Slovakia	:	10	10	13
Finland	43	50	56	63
Sweden	38	40	51	57
United Kingdom	22	22	27	28
Bulgaria	.	1	.	1
Romania	.	0	.	1

Source: Eurostat

Note: The table shows the percentage of individuals older than 16 years who used internet banking at least once during the previous three months.

Some banks have created their own internet brand and set up a dedicated website for this, leading to the impression that behind the brand there is a separate entity. Examples are First Direct “bank” in the United Kingdom, which is a division of the HSBC group and not a separate legal entity, mBank in Poland, which is a division of BRE Bank. Both brands are based on telephone (including mobile-phone) and internet banking. Products offered via the brand can be purchased, managed and sold only via the internet or via telephone.<sup>83</sup>

Finally, some banks have launched their own internet bank as a subsidiary or foreign branch.

In this report pure internet (or internet-only) banks are defined as legal entities which mainly rely on electronic distribution channels, although they can also operate some branches. Examples of pure internet banks are ING direct, Egg Banking Plc and Deutsche Kreditbank AG.

<sup>83</sup> In many cases the rates for these products are better than the rates for similar products which can be purchased in a branch. In this context the term cannibalism is often used because, due to better conditions, customers sometimes switch from their traditional deposit to an online deposit within the same bank

A lot of studies and surveys exist on the use of internet banking.<sup>84</sup> Table 2 shows the development in the use of internet banking by individuals older than 16 years in Europe, based on the annual Eurostat information society survey.<sup>85</sup> This shows that internet banking is still growing and is most popular in the Scandinavian countries and in the NL, where more than 50% of households use internet banking.<sup>86</sup> In the Baltic countries, especially in EE, this distribution channel is also more developed and popular than in the other NMS, although there is a significant, positive trend towards using internet banking in the other NMS too. Internet banking is of less importance in the south of the EU. Eurostat figures can also be analysed by age and education, indicating that internet banking usage declines with age and increases with education when looking at the total population. However, when looking at internet users alone, the share of internet banking users is almost stable by age (but still increases with education).

The use of the internet for purchasing bank products, such as savings accounts and consumer credit, is still limited. Eurostat figures show, for instance, that about 4% of individuals in the EU15 purchased a bank or insurance product online in 2006 (with a slightly upward trend over recent years). The Scandinavian countries, the UK and the NL are above average, whereas in southern Europe and in the NMS the internet is used as a sales channel to a lower extent. The answers to the questionnaire survey carried out for this report and other recent studies<sup>87</sup> confirm that, in comparison to branches, the internet has only reached a limited importance so far as a sales channel. However, the differences between EU countries are substantial, and especially in the Scandinavian countries and the NL the internet is regarded as a significant sales channel. Moreover, the aforementioned studies indicate a rising trend and predict a high potential for growth in the coming years both in the EU and in the United States.

These optimistic predictions are driven by the efforts of banks to establish the internet as

more than just a service channel. Initiatives such as special internet-only offers, the careful treatment of customers' security concerns, the enhancement of existing internet banking applications<sup>88</sup> and better integration of internet banking with other distribution channels could help these predictions to materialise. An example of a development that may foster internet banking is the possibility for internet banking clients to pay for products ordered on the internet via their internet banking account,<sup>89</sup> as the penetration of these products has grown in the past years.<sup>90</sup>

84 For instance, EFMA, *Online consumer behaviour in retail financial services*, (2006); Fortis, EFMA and Mercer Oliver Wyman, *European Mortgage Distribution*, (2007); Capgemini, EFMA and ING, *World Retail Banking Report*, (2006); Orga and EFMA, *The Challenges of Distribution in Banking and Insurance*, (2007).

85 Internet banking is defined here as "electronic transactions with a bank for payment, transfers, etc. or for looking up account information." Purchases and sales as well as searching for information on financial products are not included.

86 These countries also have the highest internet usage.

87 See EFMA, *Online consumer behaviour in retail financial services*, (2006); Fortis, EFMA and Mercer Oliver Wyman, *European Mortgage Distribution*, (2007); Capgemini, EFMA and ING, *World Retail Banking Report*, (2006); Orga and EFMA, *The Challenges of Distribution in Banking and Insurance*, (2007); Potential of Internet banking remains unfulfilled, press release of Datamonitor from 5 April 2007.

88 For instance with interactive advice or talking to a personal adviser via a webcam.

89 Examples include giropay in Germany, iDEAL in the Netherlands and eps in Austria.

90 See, for example, Bo Harald, "Second phase of electronic banking – significant contributor to efficiency in society at large", in *Technology-driven efficiencies in financial markets*, (2006); De Nederlandsche Bank, Latest developments in payment and securities systems, *Quarterly Bulletin*, March 2007.

## Box 4

**INTERNET BANKS**

Regarding the market share of online sales of retail banking products in certain EU countries, like AT, DE, ES, IT and the UK, pure internet banks (and brands) play an increasing role, although multi-channel banks have also started selling products online in these countries. In other countries, like the Scandinavian countries and the NL, such banks (or brands) do not exist or play only a minor role in online sales of banking products. In these countries multi-channel banks use mainly their existing internet banking applications to offer the opportunity of online purchases of banking products. Finally, in most of the NMS internet banks do not exist at the moment, and in these countries (with the exception of the Baltic countries) online sales have only a negligible importance at present.

A quantitative analysis of pure internet banks conducted for this report shows that since 2001, in most countries where internet banks exist, the market share (in terms of balance sheet total, loans to private households and deposits from private households) and the number of customers of these banks have grown, but are still relatively low.

Currently deposits (online savings accounts) from households are the main business of internet banks. For instance, in DE internet banks hold more than 6% of all deposits from households compared to less than 3% in 2001 and in the UK rough estimates indicate that their market share (including internet brands) is at a similar level.<sup>1</sup>

The analysis of internet banks and interest rate comparisons (via the internet) show that interest rates of online savings accounts, especially for sight deposits and other short-term deposits, are on average higher than those offered in branches for products with the same maturity. However, it can be presumed that in the long run the lower interest margins of internet banks will be probably compensated by infrastructure savings.

<sup>1</sup> The figures refer to all existing savings accounts of internet banks, hence the market share in terms of new sales/savings accounts and the market share of all online deposits are much higher. The results also confirm that the internet is gaining in importance as a sales channel.

**MOBILE PHONE AND TELEPHONE BANKING**

Mobile phone banking (m-banking) and brokerage can be seen as sub-category or enhancement of internet banking and brokerage. It can be defined as channel whereby customers interact with their bank through a mobile device (e.g. mobile phone, smart phone or PDA). Similar to online banking, m-banking applications can be based on a web browser or on special banking software which has to be installed on the mobile device (smart client solutions<sup>91</sup>). At present, m-banking is mainly used for information services, sometimes also for transaction services, but rarely as a sales

channel. Message-based services are also seen as m-banking. In this case, clients might receive an SMS (also called SMS-banking) or an MMS from their bank with information about, for example, their account balance, their last five transactions, share prices or account overdrafts.

A large number of surveys and articles are available regarding the potential of m-banking. However, little recent data on its use and the

<sup>91</sup> Smart client solutions enable the banking clients to prepare their transactions offline, hence only the data transfer is online.

purpose of its use are available. According to this data, at present only a minority of EU banking customers (less than 5%) use a mobile device for banking activities (including SMS-banking), although mobile device usage in Europe is quite high (about 80%).

M-banking was introduced by many EU banks at the end of the 1990s. However, technical progress at that time was not advanced enough to provide clients with a fast and efficient service. Thus m-banking could not be established successfully as the fifth channel (alongside branches, ATMs, telephone and the internet) and many banks abandoned the service. Today mobile devices are becoming more sophisticated and the level of standardisation is increasing. Some analysts therefore see a high potential for growth.<sup>92</sup> This view is shared by some banks which have recently resumed offering mobile banking services to their customers. However, other researchers see only a limited appeal in mobile phone banking for bank clients in industrialised countries,<sup>93</sup> because in these countries customers can already choose between various advanced distribution channels.

In any case, analysts agree that the developments in the next few years will show in which direction m-banking will go in Europe. In countries like South Africa, Kenya, other African countries, the Philippines, Japan, South Korea and other Asian countries m-banking is booming and is often used to reach poor or unbanked customers. With m-banking, services like cash deposits and withdrawals, cash transfers, top-ups of prepaid mobiles, cashless retail purchases and current account inquiries are usually offered by banks in cooperation with a mobile network provider.<sup>94</sup>

Telephone banking, a service which allows customers to perform banking transactions over the telephone, was the first important electronic distribution channel. Telephone banking is a broad term covering a wide range of services, from telephone banking applications using an automated phone answering system with phone

keypad response or voice recognition providing a 24-hour information and transaction service to fully-fledged customer relations centres. While the former can be seen as a service channel, the latter constitutes both a service and a sales channel.

Telephone banking is offered, like internet banking, by almost all large EU banks. Various studies<sup>95</sup> show that telephone banking has only grown slightly in recent years and that internet banking has become the most important electronic service and sales channel in the EU.

### 3.2 COOPERATION WITH NON-BANKS

Cooperation between banks and non-banks (post-offices, retailers and financial agents/services groups) for the distribution of retail banking services and products exists in the majority of the EU25, although it is not significant in GR, CY and MT. A reason for the development of this type of cooperation in certain countries is the growing competition between banks and other financial companies, especially in the area of consumer credit, motivating banks to distribute their products and services via a wider range of distribution channels.<sup>96</sup> Moreover, in many cases cooperation with non-banks for the distribution of retail banking products is also a cultural and historical issue. In some countries, clients traditionally

92 For instance, Buse, Tiwari, *The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector*, (2006); 51% of UK's Frequent Internet Users Are Interested in Mobile Banking, press release from Meridea, 15 Dec 2005; EDB: Strong growth in Internet banking use in Norway, *eBanking & Payments News* 31/2007.

93 See, for instance, JupiterResearch Finds Limited Consumer Interest in Mobile Banking, press release from JupiterResearch, 23 April 2007.

94 See International Finance Corporation, *Micro-Payment Systems and their application to mobile networks*, (2006).

95 For instance, Fortis, EFMA and Mercer Oliver Wyman, *European Mortgage Distribution*, (2007); Capgemini, EFMA and ING, *World Retail Banking Report*, (2006); EFMA, *Customer Contact Centres*, (2005); APACS: Internet banking outstrips telephone banking for first time in UK, *eBanking & Payments News* 25/2006.

96 Please note that the upcoming Payment Services Directive (PSD) and the changes it can imply for non-banks entering the retail banking market are not investigated in this chapter.

Table 3 Types of retailers, financial companies and financial agents/services groups

Main category	Indicative list of non-banks currently cooperating with banks
Retailers	Shopping centres/supermarkets, DIY stores, electrical retailers, sports shops, tourist agencies, real estate agencies, car-producers/dealers, furniture retailers, petrol stations
Financial companies	Insurance companies, leasing companies, investment funds, pension funds, credit agencies, companies for issuing debit and credit cards, non-banking subsidiaries, investment companies, credit unions and bureaux de change
Financial agents/services groups	Bank agents/brokers, financial consultants and freelancers

Source: BSC

bank via post-offices, and as a result the co-operation between banks and post-offices can be important. In other countries people prefer to have direct contact with their banks, and so cooperation with non-banks is not particularly developed. Especially in the case of bank agents/brokers<sup>97</sup> and services groups, cooperation is usually driven not by the banks but by the non-banks.

In most countries, the non-bank distribution channels are used by universal banks, whereas in a small number of countries, specialised credit institutions, such as building societies, mortgage banks, internet banks and credit unions are also involved in this type of cooperation. The types of the non-bank distribution channel (besides post-offices) used by EU banks are presented in Table 3.

Cooperation with various categories of retailers seems to be the most common form of cooperation with non-banks for EU banking groups. With regard to post-offices, despite variations across the EU, in half of the Member States where such cooperation is in place there is an exclusive cooperation agreement with the local post-office, and only in three countries post offices cooperate with more than four banks. Finally, financial agents/services groups operate in less than half of the EU countries, while the less common partnerships reported included cooperation with a railway company, an automobile and touring club, a municipality and a library.

Non-bank distribution channels are used for the distribution of many retail banking products and services. More specifically, typical categories of products and services provided include credit products (e.g. consumer credit, credit cards, and housing loans), deposit products (e.g. sight, term and savings accounts), cash operations (e.g. money withdrawal) and current account operations (e.g. payment transfers, electronic billing and accounting, current account administration). Nevertheless, cooperation with non-banks seems to focus primarily on the distribution of credit products, which are available via post-offices and other non-banks in more than half of the EU countries. This fact supports the opinion that non-bank distribution channels were developed as a reaction by banks to the growing competition from other financial institutions in this field.

Regarding the future of the cooperation between banks and non-banks for the distribution of banking retail products, in most countries an upward trend is expected. This should be the case for, in particular, consumer credit, housing loans and credit cards, together with various non-bank financial products.

<sup>97</sup> Bank agents are usually salespeople tied to a single bank and therefore allowed to sell only that bank's products. Alternatively, they may be without fixed ties, being able to sell products from several banks (often called "bank brokers"). Sometimes these individuals may be integrated into financial services groups. Bank agents or bank brokers normally conduct their business by contacting their clients at home and can therefore be characterised as a mobile distribution channel.



### 3.3 FINANCIAL STABILITY IMPLICATIONS

The aforementioned developments in the various types of distribution channel have certain financial stability implications. In the case of branches, the growing tendency to focus on sales and the provision of advisory services requires a cautious approach to ensure quality in banking business. Especially in the retail consumer credit market, competitive pressures could drive traditional banks into accepting borrowers of lower creditworthiness and therefore into assuming higher risks. If banks adopt more aggressive sales strategies, risk management should adapt accordingly to take into consideration this change in their risk profile. Moreover, the focus on the provision of advisory services for increasingly complex financial products by staff employed in branches could expose banks to legal risk. Finally, the use of franchise systems or bank agents/brokers could also entail legal and reputational risk in the event that the level of services provided is not commensurate with the customer's requirements and needs.

Still most of the financial stability considerations relate to the use of electronic channels, which are currently the most innovative and fastest growing channels for the provision of products and services. As a result, the relative importance of electronic channels should be taken into consideration when assessing their impact on the risk profile of banks. Given that most traditional banks still provide their products and services predominantly through their branch networks, the possible impact of electronic channels could be considered as being limited. Nevertheless, it is more significant for the currently small number of pure internet banks and needs to be increasingly monitored as the use of electronic banking advances.<sup>98</sup>

The Basel Committee does not see any inherently new risks in electronic banking, but is of the opinion that this new form of banking might increase or modify some of the traditional risks associated with banking

activities, in particular operational, reputational, strategic and liquidity risk.<sup>99</sup> Reputational and operational risks are strongly interrelated. E-banking increases the dependence of banks on information technology, thereby increasing the technical complexity of many operational and security issues. Internet failures, slow connections and the increasing number of victims of online fraud (reports on) might result in a rejection of electronic banking channels. With the increasing number of internet banking users all over the world, the number and the sophistication of internet banking attacks have also significantly increased over the recent years.<sup>100</sup> Phishing,<sup>101</sup> man-in-the-browser<sup>102</sup> attacks, Trojans<sup>103</sup> etc are serious threats which could have a lasting negative effect on electronic banking. The lack of trust in the security of electronic banking could have a negative impact not only on the institution affected by internet banking attacks, but on the whole banking sector. Presently there is no international trend for harmonised, standardised security mechanisms (e.g. for authentication), but there are a lot of ongoing efforts to improve the existing security mechanisms. Electronic signatures and hardware tokens, which generate transaction authentication numbers (TANs) that are valid only for a few minutes, are common

98 It should be kept in mind that such internet banks are often subsidiaries of universal banks and operate within the wider strategy of the parent bank, for instance entering a foreign market to collect deposits at low cost or providing specific types of loan.

99 Basel Committee, Risk Management Principles for Electronic Banking, (2003)

100 For more information see the website of the "Anti-Phishing Workgroup" (<http://www.antiphishing.org/>).

101 Phishing is typically carried out using e-mail or instant messaging inviting direct users to give details (like passwords, TANs, credit card details) via a website, although phone contact has been used as well.

102 In the context of internet banking a man-in-the-browser (also man-in-the-middle) attack is an attack in which an attacker is able to read, insert and modify messages between a customer and its bank without either party knowing that the link between them has been compromised. The attacker must be able to observe and intercept messages passing between the two victims.

103 In the context of internet banking, a trojan is a program that, unlike a virus, contains or installs a malicious program ('trojan') under the guise of being something else. Trojans may appear to be useful or interesting programs (or at the very least harmless) to an unsuspecting user, but are actually harmful when executed.

tools that could help to make electronic banking safer. Banks face the challenge of introducing secure algorithms which are not too complex or expensive, and should not rely on security mechanisms which are cheap and easy to use but not sufficiently secure.

Operational risk could also stem from outsourcing, which might intensify as banks are increasingly involved in e-banking. Software companies, IT-security firms, internet service providers and telecommunication companies are possible partners of banks which might be involved in their e-banking processes.<sup>104</sup> On the other hand, outsourcing gives banks the opportunity to keep pace with the latest developments in IT, counterbalancing some of the risks posed by the use of electronic channels, e.g. through improved security mechanisms.

Strategic risk is the risk associated with the wrong decision to incur a large investment motivated by competitive pressures, new market conditions, new customer needs or continued technological change. Timing is also a critical issue in strategic risk, as an early investment, for instance in an innovative distribution channel, could drive banks to incur high costs that can be accentuated by the rapid obsolescence of technology. On the other hand, lagging behind in the adoption of such strategies, may mean that the institution will have difficulty entering a, by then, already saturated market.

The Basel Committee and the Federal Financial Institutions Examination Council (FFIEC) have linked strategic risk with e-banking.<sup>105</sup> Nowadays e-banking is to a large extent an established distribution channel, but strategic risk still needs to be taken into consideration when planning the distribution strategy of banks.

Lastly, liquidity risk could increase, especially for banks which rely heavily on online deposits (like internet banks). According to an ECB study,<sup>106</sup> deposits of households are still the most important source of funding for European banks. Traditional deposits are seen as a

stable funding source, so liquidity risk can be reasonably estimated on the basis of historical data. However, as mentioned in Section 3.1.2, online sales have gained in importance and analysts see a high potential for further increase, especially for standardised online savings accounts with short maturity, or even online overnight deposits, that have reached a high level of acceptance. The increase in online deposits is largely driven by higher interest rates. This means that customers could be more willing to change their bank if they find a similar product with higher interest rate (which is nowadays easier because of the transparency of the internet). Therefore it can be assumed that online deposits are more volatile than traditional deposits.<sup>107</sup>

### 3.4 MAIN FINDINGS AND CONCLUSIONS

Three main developments can be identified in relation to the distribution strategies of banks. First, branches are being redesigned in terms of location and services offered to clients in order to make them more cost-efficient and to integrate them with the new distribution channels used by banks. Second, electronic channels are growing rapidly, not only providing information and transaction services, but also being used for the promotion and sale of banking products. Third, in an effort to address the fierce competition in the area of consumer credit, banks are gradually increasing their cooperation with third parties, such as retailers, financial companies and financial agents/services groups.

There are significant advantages for banks and their customers stemming from this multi-channel strategy. On one hand, an increasing number of transactions traditionally done

<sup>104</sup> For additional risks related to outsourcing see ECB, *Report on EU Banking Structure*, (2004).

<sup>105</sup> See Electronic Banking Group Initiatives and White Papers (October 2000) and FFIEC, *Booklet E-Banking*, (2003)

<sup>106</sup> ECB, The changing structure of EU banks' funding and its implications for their activities, *EU Banking Structure*, (2006)

<sup>107</sup> See also Basel Committee on Banking Supervision, The Joint Forum, *The management of liquidity risk in financial groups*, (2006).

through branches has been automated and can thus be carried out directly by clients through electronic channels, enabling branches to focus on high value-added activities such as sales and advisory services. On the other hand, the use of different types of channels contributes to greater customer satisfaction since, through electronic means, clients have access to banking services regardless of office hours, without having to go to the branches and frequently at better prices.

However, the developments in the distribution of retail products and services raise certain financial stability considerations. The increased focus on sales both by banks and by the non-banks cooperating with them could have a negative impact in the form of more lax credit standards. Moreover, as banks are gradually becoming more involved in the distribution of complex products and in the provision of advisory services, special training is required for the personnel involved in order to avoid possible legal risks.

The most relevant financial stability considerations are linked to the development of electronic distribution channels. Due to the dependence of these types of distribution channel on advanced technology, reputational risk is interrelated to operational risk. Possible technology failures and increasing online fraud could lead to the loss of trust in electronic channels, having an impact not only on those banks directly affected but also on electronic banking in general.

In addition to the above, strategic risk (relating to the investment required for different distribution channels and the timing of such an investment) and liquidity risk may also stem from the distribution strategies of banks. The latter may be incurred through increased customer mobility possibly generated as the more stable customer relations, fostered in bank branches, are progressively substituted by more impersonal relations based mainly on price considerations at a time when electronic channels offer increased transparency and facilitate the transfer of funds. However, in

many countries there are certain limitations also in e-banking (e.g. it is not possible to retain the same account number when changing banks) that hinder full customer mobility.

Despite augmenting the aforementioned banking risks, the changes in the channels used by banks for the distribution of retail products have not, to date, raised significant financial stability concerns. Still, the distribution strategies of banks need to be monitored, not only in view of their possible financial stability implications, but also for their potential to have a positive effect on competition and integration in the banking sector.

# ANNEX I

## STRUCTURAL INDICATORS OF THE EU BANKING SECTOR

ANNEXES

Table I Number of credit institutions (CIs) and local units (branches) of CIs

	Number of credit institutions					Number of local units (branches)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	111	108	104	100	105	5,550	4,989	4,837	4,564	4,574
Czech Republic	84	77	70	56	57	1,722	1,670	1,785	1,825	1,877
Denmark	178	203	202	197	191	2,128	2,118	2,119	2,114	2,144
Germany	2,363	2,225	2,148	2,089	2,050	50,868	47,244	45,331	44,044	40,282
Estonia	7	7	9	11	14	198	197	203	230	245
Ireland	85	80	80	78	78	926	924	909	910	935
Greece	61	59	62	62	62	3,263	3,300	3,403	3,543	3,699
Spain	359	348	346	348	352	39,009	39,750	40,603	41,979	43,691
France	989	939	897	854	829	26,162	25,789	26,370	27,075	40,013
Italy	821	801	787	792	807	29,948	30,501	30,950	31,504	32,337
Cyprus	408	408	405	391	336	993	983	977	951	941
Latvia	23	23	23	25	27	567	581	583	586	610
Lithuania	68	71	74	78	77	n.a.	723	758	822	892
Luxembourg	184	172	165	157	154	271	269	253	246	234
Hungary	227	222	217	214	212	2,992	3,003	2,987	3,125	3,243
Malta	15	16	16	19	18	99	104	99	109	110
Netherlands	539	481	461	401	345	4,269	3,883	3,798	3,748	3,456
Austria	823	814	796	818	809	4,466	4,395	4,360	4,300	4,258
Poland	666	660	744	730	723	4,302	4,394	5,003	5,078	5,158
Portugal	202	200	197	186	178	5,348	5,397	5,371	5,422	5,618
Slovenia	50	33	24	25	27	721	725	706	693	696
Slovakia	22	22	21	23	24	1,020	1,057	1,113	1,142	1,175
Finland	369	366	363	363	361	1,572	1,564	1,585	1,616	1,598
Sweden	216	222	212	200	204	2,054	2,069	2,018	2,003	2,004
United Kingdom	451	426	413	400	401	13,867	13,646	13,386	13,130	12,880
<b>MU12</b>	<b>6,906</b>	<b>6,593</b>	<b>6,406</b>	<b>6,248</b>	<b>6,130</b>	<b>171,652</b>	<b>168,005</b>	<b>167,770</b>	<b>168,951</b>	<b>180,695</b>
<b>EU25<sup>1)</sup></b>	<b>9,321</b>	<b>8,983</b>	<b>8,836</b>	<b>8,617</b>	<b>8,441</b>	<b>202,315</b>	<b>199,275</b>	<b>199,507</b>	<b>200,759</b>	<b>212,670</b>
Bulgaria	34	35	35	34	32	n.a.	n.a.	5,606	5,629	5,569
Romania	39	39	40	40	39	n.a.	3,387	3,031	3,533	4,470

1) EU25 total excludes n.a.

**Table 2 Number of employees and total assets of CIs**

	Number of employees of CIs					Total assets of CIs (EUR millions)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	75,370	73,553	71,347	69,481	67,957	774,330	828,557	914,391	1,055,270	1,121,905
Czech Republic	40,534	39,658	38,666	37,943	37,825	79,232	78,004	87,104	100,902	114,756
Denmark	47,613	46,443	46,372	47,579	46,394	534,187	568,848	629,371	746,247	822,399
Germany	753,950	725,550	712,300	705,000	692,500	6,370,194	6,393,524	6,584,388	6,826,558	7,122,777
Estonia	3,934	4,280	4,455	5,029	5,681	5,221	6,314	8,586	11,876	15,379
Ireland	36,585	35,658	35,564	37,702	39,154	474,630	575,168	722,544	941,909	1,186,228
Greece	60,495	61,074	59,337	61,295	62,171	201,608	213,171	230,454	281,066	315,081
Spain	243,429	243,462	246,236	252,831	261,890	1,342,492	1,502,861	1,717,364	2,149,456	2,515,527
France	430,178	426,570	435,526	432,197	435,413	3,831,610	3,998,554	4,419,045	5,073,388	5,728,127
Italy	340,440	336,661	336,354	335,917	339,878	2,024,156	2,125,366	2,275,628	2,509,436	2,793,244
Cyprus	10,613	10,480	10,617	10,799	10,845	40,943	41,890	46,540	60,366	74,397
Latvia	8,267	8,903	9,655	10,477	11,656	7,250	8,482	11,167	15,727	22,694
Lithuania	8,420	7,557	7,266	7,637	8,624	5,000	6,453	8,553	13,162	17,347
Luxembourg	23,300	22,513	22,549	23,224	24,752	662,615	655,971	695,103	792,418	839,564
Hungary	35,045	35,725	35,558	37,527	39,302	43,564	55,166	68,201	78,289	93,754
Malta	3,459	3,416	3,371	3,383	3,515	16,313	17,901	20,838	27,195	30,556
Netherlands	125,911	120,539	118,032	120,165	116,500	1,356,397	1,473,939	1,677,583	1,695,325	1,873,129
Austria	74,048	73,308	72,858	75,303	76,323	554,528	586,459	635,348	721,159	789,770
Poland	161,814	154,569	150,037	152,923	155,881	124,855	112,189	141,571	163,422	189,511
Portugal	55,679	54,350	53,230	54,035	58,213	310,370	348,691	345,378	360,190	397,123
Slovenia	11,855	11,816	11,602	11,726	11,838	19,995	21,541	24,462	30,135	34,879
Slovakia	20,532	19,812	19,819	19,773	19,633	23,748	23,751	30,834	37,834	41,716
Finland	27,190	26,667	25,377	25,182	23,947	165,661	185,846	212,427	234,520	255,055
Sweden	45,961	44,389	44,242	44,943	47,069	487,211	519,259	599,682	653,178	773,708
United Kingdom	501,787	487,772	490,436	461,654	453,045	5,855,895	6,171,438	6,931,831	8,318,588	9,651,517
<b>MU12</b>	<b>2,246,575</b>	<b>2,199,905</b>	<b>2,188,710</b>	<b>2,192,332</b>	<b>2,198,698</b>	<b>18,068,591</b>	<b>18,888,107</b>	<b>20,429,653</b>	<b>22,640,695</b>	<b>24,937,530</b>
<b>EU25</b>	<b>3,146,409</b>	<b>3,074,725</b>	<b>3,060,806</b>	<b>3,043,725</b>	<b>3,050,006</b>	<b>25,312,005</b>	<b>26,519,342</b>	<b>29,038,393</b>	<b>32,897,616</b>	<b>36,820,142</b>
Bulgaria	n.a.	n.a.	22,467	22,945	26,738	7,754	9,254	13,224	17,447	22,302
Romania	n.a.	46,567	49,702	52,452	58,536	13,452	14,782	22,729	34,955	51,109

Note: For PT the increase in the number of employees in 2006 was mainly due to the incorporation of back-office operations (and staff) previously organised through jointly controlled entities in two of the main Portuguese banks.

**Table 3 Herfindahl index for CIs' and market share of the largest CIs in total assets**

(index ranging from 0 to 10,000 and in percent)

	Herfindahl index for CIs					Market share of the 5 largest CIs (in % of total assets)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	1,905	2,063	2,102	2,112	2,041	82.0	83.5	84.3	85.3	84.4
Czech Republic	1,199	1,187	1,103	1,155	1,106	65.7	65.8	64.0	65.5	64.1
Denmark	1,145	1,114	1,146	1,115	1,071	68.0	66.6	67.0	66.3	64.7
Germany	163	173	178	174	178	20.5	21.6	22.1	21.6	22.0
Estonia	4,028	3,943	3,887	4,039	3,593	99.1	99.2	98.6	98.1	97.1
Ireland	553	500	556	600	600	46.1	44.0	43.9	46.0	45.0
Greece	1,164	1,130	1,070	1,096	1,101	67.4	66.9	65.0	65.6	66.3
Spain	513	506	482	487	442	43.5	43.1	41.9	42.0	40.4
France	551	597	623	758	727	44.6	46.7	49.2	52.3	52.3
Italy	270	240	230	230	220	30.5	27.5	26.4	26.8	26.3
Cyprus	938	946	940	1,029	1,056	57.8	57.2	57.3	59.8	63.9
Latvia	1,144	1,054	1,021	1,176	1,271	65.3	63.1	62.4	67.3	69.2
Lithuania	2,240	2,071	1,854	1,838	1,913	83.9	81.0	78.9	80.6	82.5
Luxembourg	296	315	304	312	294	30.3	31.8	29.7	30.7	29.1
Hungary	856	783	798	795	823	54.5	52.1	52.7	53.2	53.5
Malta	1,806	1,580	1,452	1,330	1,185	82.4	77.7	78.5	75.3	71.4
Netherlands	1,788	1,744	1,726	1,796	1,822	82.7	84.2	84.0	84.5	85.1
Austria	618	557	552	560	534	45.6	44.2	43.8	45.0	43.8
Poland	792	754	692	650	599	53.4	52.3	50.2	48.6	46.5
Portugal	963	1,043	1,093	1,154	1,134	60.5	62.7	66.5	68.8	67.9
Slovenia	1,602	1,496	1,425	1,369	1,300	68.4	66.4	64.6	63.0	62.0
Slovakia	1,252	1,191	1,154	1,076	1,131	66.4	67.5	66.5	67.7	66.9
Finland	2,050	2,420	2,680	2,730	2,560	78.6	81.2	82.7	82.9	82.3
Sweden	800	760	854	845	856	56.0	53.8	54.4	57.3	57.8
United Kingdom	307	347	376	399	394	29.6	32.8	34.5	36.3	35.9
<b>MU12</b>	<b>551</b>	<b>578</b>	<b>600</b>	<b>641</b>	<b>629</b>	<b>39.3</b>	<b>40.5</b>	<b>41.6</b>	<b>42.7</b>	<b>42.8</b>
<b>unweighted avg.</b>	<b>903</b>	<b>941</b>	<b>966</b>	<b>1,001</b>	<b>971</b>	<b>52.7</b>	<b>53.1</b>	<b>53.3</b>	<b>54.3</b>	<b>53.7</b>
<b>EU25</b>	<b>520</b>	<b>546</b>	<b>570</b>	<b>601</b>	<b>589</b>	<b>38.3</b>	<b>39.8</b>	<b>41.0</b>	<b>42.2</b>	<b>42.1</b>
<b>unweighted avg.</b>	<b>1,158</b>	<b>1,141</b>	<b>1,132</b>	<b>1,153</b>	<b>1,118</b>	<b>59.3</b>	<b>58.9</b>	<b>58.8</b>	<b>59.6</b>	<b>59.2</b>
Bulgaria	n.a.	n.a.	721	698	707	n.a.	n.a.	52.3	50.8	50.3
Romania	n.a.	1,251	1,111	1,115	1,165	n.a.	55.2	59.5	59.4	60.1



**Table 4 Loans of CIs to non-financial corporations and loans of CIs for housing purchase**

(EUR millions)

	Loans of CIs to non-financial corporations					Loans of CIs for housing purchase				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	90,840	86,850	86,459	90,624	97,180	63,609	71,710	80,440	94,732	107,378
Czech Republic	14,178	13,750	15,454	18,844	23,920	3,550	4,793	6,890	9,737	13,639
Denmark	n.a.	83,458	89,536	102,350	120,962	n.a.	152,704	167,548	192,052	215,939
Germany	840,675	813,746	786,844	774,105	800,306	921,822	937,379	949,457	961,186	976,123
Estonia	1,240	1,490	2,005	3,212	5,177	593	954	1,495	2,602	4,248
Ireland	54,912	64,952	85,555	107,078	143,603	44,126	55,012	73,739	94,776	111,403
Greece	52,294	58,319	63,004	69,140	73,830	21,064	26,364	32,944	43,001	52,313
Spain	340,980	387,804	454,715	579,687	760,329	236,388	277,573	335,665	448,266	547,155
France	548,866	534,704	566,939	610,934	670,150	347,954	385,078	432,396	495,105	569,975
Italy	546,559	588,676	615,187	647,458	728,275	131,660	154,374	185,016	217,221	244,409
Cyprus	n.a.	n.a.	n.a.	n.a.	7,939	n.a.	n.a.	n.a.	n.a.	3,159
Latvia	2,230	2,241	2,933	4,346	6,601	390	727	1,325	2,524	4,699
Lithuania	1,944	2,811	3,243	4,636	6,545	286	553	999	1,874	3,002
Luxembourg	40,159	36,625	33,741	37,277	41,682	7,052	8,291	9,335	10,586	12,018
Hungary	14,547	17,732	20,805	23,062	26,163	3,639	5,745	7,765	9,029	10,728
Malta	6,258	2,999	3,171	3,345	3,949	898	1,061	1,246	1,522	1,775
Netherlands	205,966	214,011	223,999	241,969	260,304	282,937	302,392	331,742	368,612	383,338
Austria	132,166	131,263	114,015	121,566	129,404	35,998	39,746	48,078	53,835	60,669
Poland	29,435	25,845	30,856	32,247	37,018	6,885	8,258	8,779	13,181	20,505
Portugal	78,693	82,717	84,079	88,049	94,598	64,954	66,485	71,139	79,488	91,916
Slovenia	5,929	6,784	8,665	10,510	12,958	457	557	778	1,368	1,956
Slovakia	5,502	5,975	5,890	7,181	9,536	1,040	1,427	2,266	3,137	4,557
Finland	32,991	34,719	37,708	41,181	44,833	30,960	36,049	41,544	48,490	55,307
Sweden	127,352	124,953	128,340	138,456	154,982	81,219	84,129	97,897	107,404	126,542
United Kingdom	439,635	408,373	427,004	539,587	630,792	1,035,858	1,099,647	1,239,780	1,407,185	1,601,475
<b>MU12</b>	<b>2,965,101</b>	<b>3,034,386</b>	<b>3,152,245</b>	<b>3,409,068</b>	<b>3,844,494</b>	<b>2,188,524</b>	<b>2,360,453</b>	<b>2,591,495</b>	<b>2,915,298</b>	<b>3,212,004</b>
<b>EU25 <sup>1)</sup></b>	<b>3,613,351</b>	<b>3,730,797</b>	<b>3,890,147</b>	<b>4,296,844</b>	<b>4,891,036</b>	<b>3,323,338</b>	<b>3,721,008</b>	<b>4,128,283</b>	<b>4,666,913</b>	<b>5,224,229</b>
Bulgaria	n.a.	n.a.	4,705	5,774	6,895	n.a.	n.a.	509	1,006	1,751
Romania	n.a.	n.a.	7,153	9,948	14,987	n.a.	n.a.	850	1,445	1,748

1) EU25 total excludes n.a.

**Table 5 Loans of CIs for consumer credit and other household lending from CIs**

(EUR millions)

	Loans of CIs for consumer credit					Other household lending from CIs				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	8,651	8,648	8,013	8,533	8,861	17,372	15,524	17,201	18,218	18,768
Czech Republic	1,396	1,679	2,243	3,089	4,007	805	859	1,222	1,591	2,048
Denmark	n.a.	13,353	14,213	14,836	16,513	n.a.	16,317	17,554	20,732	22,777
Germany	225,187	174,919	174,448	171,048	167,605	274,380	319,502	313,494	307,830	296,289
Estonia	75	95	170	280	530	163	181	203	285	381
Ireland	14,485	12,310	14,725	17,509	19,996	1,343	4,300	5,567	7,127	8,525
Greece	9,757	12,386	17,025	20,821	25,544	518	1,260	1,456	1,649	2,135
Spain	53,800	55,603	62,367	77,235	92,213	65,597	77,598	84,804	95,923	110,806
France	121,118	128,415	134,093	141,976	148,748	75,512	71,941	73,018	73,640	73,023
Italy	28,386	33,012	38,117	44,335	49,878	122,174	122,864	128,100	130,894	136,799
Cyprus	n.a.	n.a.	n.a.	n.a.	1,463	n.a.	n.a.	n.a.	n.a.	2,352
Latvia	136	207	305	521	852	163	202	284	487	650
Lithuania	n.a.	n.a.	217	441	742	n.a.	n.a.	235	398	849
Luxembourg	1,114	1,185	1,269	1,289	1,290	14,088	13,502	12,820	12,936	12,556
Hungary	1,193	2,116	2,956	4,766	6,891	1,461	1,160	1,526	1,261	1,374
Malta	106	113	187	213	252	240	475	458	439	524
Netherlands	18,647	20,442	23,480	24,625	25,417	22,364	22,641	22,505	22,908	26,857
Austria	22,886	21,525	24,769	27,878	25,193	6,638	7,015	21,270	28,067	28,389
Poland	10,319	9,066	11,176	13,875	16,241	6,170	5,372	8,536	9,805	12,768
Portugal	8,161	8,720	9,089	9,427	11,416	10,534	9,817	10,806	11,261	12,058
Slovenia	n.a.	n.a.	1,838	1,968	2,287	n.a.	n.a.	790	946	1,138
Slovakia	142	214	512	653	1,042	n.a.	n.a.	538	988	1,313
Finland	6,705	7,324	8,047	9,401	10,422	9,100	9,666	10,433	11,158	12,227
Sweden	n.a.	9,726	10,617	11,364	13,470	43,252	44,518	46,728	49,471	56,007
United Kingdom	259,603	256,458	280,950	307,097	315,257	191,618	182,487	198,698	190,407	204,735
<b>MU12</b>	<b>518,897</b>	<b>484,489</b>	<b>515,442</b>	<b>554,077</b>	<b>586,583</b>	<b>619,620</b>	<b>675,630</b>	<b>701,474</b>	<b>721,611</b>	<b>738,432</b>
<b>EU25<sup>1)</sup></b>	<b>791,866</b>	<b>777,517</b>	<b>840,826</b>	<b>913,182</b>	<b>966,130</b>	<b>863,491</b>	<b>927,202</b>	<b>978,245</b>	<b>998,422</b>	<b>1,045,350</b>
Bulgaria	n.a.	n.a.	1,458	2,182	2,451	n.a.	n.a.	269	354	426
Romania	n.a.	n.a.	2,130	4,357	9,221	n.a.	n.a.	n.a.	n.a.	n.a.

1) EU25 total excludes n.a.

**Table 6 Total loans and total deposits of CIs to/from non-CIs**

(EUR millions)

	Total loans of CIs to non-CIs					Total deposits of CIs from non-CIs				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	279,079	287,359	304,112	362,765	388,551	348,184	371,244	409,187	462,586	466,168
Czech Republic	29,432	31,324	33,452	40,959	51,623	52,347	52,644	58,919	67,514	77,511
Denmark	274,981	308,878	337,690	389,843	447,450	93,903	107,112	122,368	143,245	154,405
Germany	3,021,886	3,025,616	3,009,309	3,023,001	3,053,147	2,446,480	2,491,328	2,558,159	2,646,358	2,759,117
Estonia	3,194	4,421	5,810	8,027	11,373	3,115	3,415	3,570	5,969	7,614
Ireland	198,836	207,917	261,797	333,378	404,361	147,581	164,240	186,766	235,966	290,207
Greece	95,084	110,018	127,637	147,764	167,359	133,879	140,040	159,861	187,596	211,069
Spain	759,698	862,851	1,010,453	1,277,919	1,602,078	764,855	818,322	887,324	1,084,081	1,320,297
France	1,370,384	1,431,727	1,531,434	1,700,679	1,887,444	1,078,446	1,198,491	1,270,370	1,367,367	1,419,514
Italy	1,065,791	1,128,503	1,188,949	1,280,350	1,423,557	764,442	768,127	807,109	872,933	931,398
Cyprus	21,545	21,804	24,769	28,162	17,586	27,846	28,155	30,062	37,819	24,012
Latvia	3,470	3,963	5,478	10,007	15,442	5,033	2,647	3,433	8,913	11,054
Lithuania	2,573	3,890	5,442	8,801	12,306	3,463	4,091	5,169	7,058	8,705
Luxembourg	131,989	118,528	119,919	144,882	159,420	199,744	207,247	221,952	241,440	288,128
Hungary	26,397	31,886	39,655	47,277	56,300	31,208	29,866	34,979	41,089	47,129
Malta	7,423	8,016	8,560	11,013	14,102	8,675	8,177	8,769	11,235	11,059
Netherlands	704,470	761,691	850,583	947,478	1,034,977	539,280	570,573	598,830	684,003	793,700
Austria	273,066	277,053	295,528	327,594	349,415	214,464	224,844	234,736	254,044	269,477
Poland	61,000	57,000	67,092	77,995	96,459	81,000	72,000	89,334	105,818	121,586
Portugal	183,212	185,829	194,798	209,241	230,918	134,713	139,138	147,755	164,029	177,098
Slovenia	9,317	10,461	14,390	16,882	21,389	13,910	14,154	15,094	16,046	17,556
Slovakia	n.a.	n.a.	11,229	14,609	19,283	n.a.	n.a.	19,659	21,889	26,967
Finland	85,991	94,137	103,944	117,289	131,397	72,146	76,801	80,829	86,412	89,165
Sweden	271,770	283,927	302,530	345,367	404,182	118,614	126,556	130,210	153,446	182,526
United Kingdom	2,195,365	2,222,173	2,437,899	2,750,792	3,092,608	1,820,254	1,845,590	2,011,973	2,355,924	2,729,444
<b>MU12</b>	<b>8,169,486</b>	<b>8,491,229</b>	<b>8,998,463</b>	<b>9,872,340</b>	<b>10,832,624</b>	<b>6,844,214</b>	<b>7,170,395</b>	<b>7,562,878</b>	<b>8,286,815</b>	<b>9,015,338</b>
<b>EU25<sup>1)</sup></b>	<b>11,075,953</b>	<b>11,478,971</b>	<b>12,292,457</b>	<b>13,622,074</b>	<b>15,092,728</b>	<b>9,103,581</b>	<b>9,464,801</b>	<b>10,096,417</b>	<b>11,262,780</b>	<b>12,434,905</b>
Bulgaria	n.a.	n.a.	7,157	9,443	11,750	n.a.	n.a.	9,256	11,526	15,423
Romania	5,121	7,312	10,475	16,431	27,394	n.a.	n.a.	7,566	16,183	21,384

1) EU25 total excludes n.a.

**Table 7 Gross issues of long-term and short-term debt securities by non-financial companies**

(EUR millions)

	Gross issues of long-term debt securities by non-financial companies in all currencies					Gross issues of short-term debt securities by non-financial companies in all currencies				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	4,158	6,454	4,420	2,650	4,507	54,810	59,091	55,744	45,544	43,196
Czech Republic	382	389	250	221	436	0	0	0	0	0
Denmark	n.a.	n.a.	n.a.	n.a.	8,585	n.a.	n.a.	n.a.	n.a.	2,998
Germany	16,388	21,615	28,626	22,769	15,969	117,290	197,879	237,986	219,474	184,345
Estonia	13	16	48	70	163	34	8	10	27	62
Ireland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Greece	87	452	1,162	4,571	4,513	0	0	24	0	0
Spain	572	1,427	1,319	1,061	341	9,815	7,293	7,020	6,963	7,785
France	38,061	60,142	34,167	33,405	44,019	455,336	409,773	490,148	480,900	581,644
Italy	10,380	7,472	17,151	6,204	6,060	2	20	0	1	8
Cyprus	8	28	0	2	n.a.	0	0	0	0	0
Latvia	0	38	0	4	31	0	0	0	0	0
Lithuania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Luxembourg	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Hungary	n.a.	128	0	101	0	n.a.	0	0	0	0
Malta	119	58	24	0	30	n.a.	n.a.	n.a.	n.a.	n.a.
Netherlands	4,841	8,016	2,805	5,264	8,266	1,703	3,452	550	604	141
Austria	3,207	6,572	4,001	8,946	3,994	375	778	784	796	516
Poland	n.a.	293	563	385	710	n.a.	n.a.	10,030	9,306	11,241
Portugal	396	1,140	1,190	2,675	3,064	42,846	54,819	70,540	98,146	105,134
Slovenia	4	17	130	205	25	n.a.	n.a.	n.a.	n.a.	n.a.
Slovakia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	2,092	2,109	2,343	1,604	3,983	58,199	63,028	68,261	90,545	100,631
Sweden	4,603	2,708	2,523	3,340	3,366	n.a.	n.a.	n.a.	n.a.	n.a.
United Kingdom	47,266	53,021	52,062	50,032	71,206	n.a.	132,852	130,538	123,792	193,520
Bulgaria	n.a.	n.a.	41	55	126	-	-	-	-	-
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: For SE the data refer only to gross issues of long-term debt securities by non-financial companies denominated in SEK issued on the Swedish market.

**Table 8 Total assets under management in insurance corporations and in investment funds**

(EUR millions)

	Total assets under management in insurance corporations					Total assets under management in investment funds				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	123,080	140,040	163,653	184,976	201,991	78,288	84,306	94,872	110,098	124,135
Czech Republic	6,337	6,856	8,499	9,739	10,717	4,021	3,431	3,699	5,055	2,916
Denmark	98,643	107,602	124,227	146,128	152,715	39,042	49,306	76,880	106,525	124,016
Germany	1,006,264	1,059,584	1,092,121	1,138,556	1,033,295	741,402	826,764	861,844	975,443	1,028,641
Estonia	182	233	311	451	604	104	158	313	614	982
Ireland	61,592	74,171	91,699	121,278	n.a.	170,005	224,701	281,546	393,523	482,412
Greece	9,062	10,153	10,937	15,496	17,350	14,742	14,342	15,908	22,490	17,431
Spain	168,196	184,567	203,744	220,119	233,280	144,150	178,858	207,570	239,726	305,716
France	868,444	945,942	1,029,348	1,151,971	1,290,591	600,803	703,192	799,207	943,231	1,156,276
Italy	326,313	366,002	440,224	496,027	554,448	338,574	318,895	320,709	349,934	340,691
Cyprus	3,362	3,934	3,548	4,650	n.a.	n.a.	n.a.	n.a.	706	1,008
Latvia	204	211	219	264	343	20	39	52	109	79
Lithuania	266	355	443	535	661	0	0	35	96	229
Luxembourg	28,941	33,448	39,503	49,677	n.a.	725,781	818,462	974,685	1,425,804	1,725,809
Hungary	4,181	4,405	5,385	6,199	7,398	4,020	3,458	4,327	7,623	7,370
Malta	516	588	771	981	1,151	642	821	1,005	4,232	4,753
Netherlands	284,283	293,584	315,977	345,297	331,923	90,109	97,178	98,236	105,901	115,117
Austria	60,092	63,833	68,280	76,760	82,522	101,504	108,931	122,619	153,342	165,686
Poland	13,858	13,584	18,468	22,678	26,241	5,663	7,045	9,249	15,880	25,798
Portugal	29,559	32,471	36,024	43,290	48,532	25,421	28,456	31,261	36,694	40,566
Slovenia	1,700	1,980	2,315	2,710	3,293	2,249	1,856	2,085	2,221	2,943
Slovakia	1,543	1,954	2,449	2,944	4,214	n.a.	887	1,641	3,253	1,759
Finland	39,206	41,729	43,536	49,613	52,469	11,573	15,429	21,517	32,981	45,850
Sweden	176	195	214	240	267	73,449	92,638	117,402	145,302	161,067
United Kingdom	2,393,543	2,139,614	2,296,291	2,779,804	3,173,492	298,475	342,273	389,134	505,556	608,673
<b>MU12<sup>1)</sup></b>	<b>3,005,032</b>	<b>3,245,524</b>	<b>3,535,046</b>	<b>3,893,060</b>	<b>3,846,401</b>	<b>3,042,352</b>	<b>3,419,513</b>	<b>3,829,975</b>	<b>4,789,167</b>	<b>5,548,331</b>
<b>EU25<sup>1)</sup></b>	<b>5,529,545</b>	<b>5,527,035</b>	<b>5,998,187</b>	<b>6,870,383</b>	<b>7,227,498</b>	<b>3,470,037</b>	<b>3,921,424</b>	<b>4,435,797</b>	<b>5,586,339</b>	<b>6,489,924</b>
Bulgaria	n.a.	n.a.	325	399	567	n.a.	n.a.	29	49	107
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

1) MU12 and EU25 totals exclude n.a.

Note: Total assets under management in investment funds for CZ include money market funds until 2005.

Table 9 Total assets under management by pension funds

(EUR billions)					
	2002	2003	2004	2005	2006
Belgium	13,543	10,833	11,677	13,169	n.a.
Czech Republic	2,183	2,532	3,352	4,256	5,308
Denmark	42,281	45,682	50,868	56,664	59,486
Germany	n.a.	142	260	330	510
Estonia	15	71	172	329	531
Ireland	44,810	55,451	62,334	74,681	0
Greece	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	49,610	56,997	64,186	75,721	83,347
France	n.a.	n.a.	n.a.	n.a.	n.a.
Italy	11,709	16,836	18,239	19,391	21,016
Cyprus	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia	23	28	37	53	76
Lithuania	0	0	40	128	228
Luxembourg	n.a.	n.a.	n.a.	n.a.	n.a.
Hungary	3,447	4,031	6,063	7,682	9,545
Malta	0	0	0	0	0
Netherlands	423,268	475,488	522,268	621,829	696,271
Austria	7,876	9,111	10,126	11,549	12,497
Poland	0	0	0	22,300	30,426
Portugal	15,552	16,283	15,186	18,982	21,171
Slovenia	241	339	529	729	961
Slovakia	n.a.	n.a.	n.a.	240	812
Finland	0	0	0	0	0
Sweden	53	64	72	83	91
United Kingdom	1,461,952	1,450,057	1,605,560	2,060,411	2,351,452
<b>MU12<sup>1)</sup></b>	<b>566,368</b>	<b>641,141</b>	<b>704,276</b>	<b>835,652</b>	<b>834,812</b>
<b>EU25<sup>1)</sup></b>	<b>2,076,564</b>	<b>2,143,945</b>	<b>2,370,969</b>	<b>2,988,528</b>	<b>3,293,728</b>
Bulgaria	n.a.	n.a.	406	571	778
Romania	n.a.	n.a.	n.a.	n.a.	n.a.

1) MU12 and EU25 totals exclude n.a.



**Table 10 Number of branches of CIs from EU and third countries**

	Number of branches of CIs from EU countries					Number of branches of CIs from third countries				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	36	38	36	41	46	10	10	9	9	8
Czech Republic	8	8	9	12	13	1	1	0	0	0
Denmark	8	16	15	17	17	2	2	2	2	3
Germany	62	64	62	69	68	21	20	21	20	18
Estonia	1	1	3	6	7	0	0	0	0	0
Ireland	31	31	31	31	31	1	1	1	1	1
Greece	14	14	19	19	20	7	6	4	4	4
Spain	50	49	53	57	62	9	8	8	8	7
France	51	52	55	55	59	28	28	27	26	25
Italy	47	49	50	58	65	13	13	10	10	9
Cyprus	5	5	4	4	4	19	19	19	18	17
Latvia	1	1	1	1	3	0	0	0	0	0
Lithuania	3	2	2	2	2	1	1	0	0	0
Luxembourg	48	41	38	36	34	7	9	9	8	8
Hungary	0	0	0	3	4	0	0	0	0	0
Malta	0	0	0	0	0	2	2	2	2	2
Netherlands	19	20	22	22	16	9	8	7	6	5
Austria	15	18	18	25	25	0	0	0	1	1
Poland	0	0	3	7	12	0	0	0	0	0
Portugal	21	22	26	24	23	1	1	1	1	1
Slovenia	1	1	2	3	2	0	0	0	0	0
Slovakia	2	3	3	5	7	0	0	0	0	0
Finland	19	18	19	19	22	0	0	1	1	1
Sweden	16	15	17	18	16	3	3	3	2	3
United Kingdom	84	82	81	81	83	105	97	91	89	89
<b>MU12</b>	<b>413</b>	<b>416</b>	<b>429</b>	<b>456</b>	<b>471</b>	<b>106</b>	<b>104</b>	<b>98</b>	<b>95</b>	<b>88</b>
<b>EU25</b>	<b>542</b>	<b>550</b>	<b>569</b>	<b>615</b>	<b>641</b>	<b>239</b>	<b>229</b>	<b>215</b>	<b>208</b>	<b>202</b>
Bulgaria	n.a.	n.a.	4	4	2	n.a.	n.a.	2	2	2
Romania	n.a.	7	6	5	6	n.a.	1	1	1	1

Table II Total assets of branches of CIs from EU and third countries

(EUR millions)

	Total assets of branches of CIs from EU countries					Total assets of branches of CIs from third countries				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	27,221	25,909	29,225	29,348	32,080	10,971	12,928	11,901	20,235	30,103
Czech Republic	7,486	7,222	8,656	9,694	10,541	*	*	0	0	0
Denmark	22,710	24,575	26,533	34,932	40,554	*	*	*	*	148
Germany	75,663	67,391	69,962	79,512	105,634	32,899	20,464	23,257	23,834	23,228
Estonia	*	*	806	1,161	1,522	0	0	0	0	0
Ireland	60,167	69,773	80,804	94,974	123,447	*	*	*	*	*
Greece	11,489	12,769	22,634	28,089	31,287	5,881	6,383	394	400	471
Spain	61,427	85,608	121,770	154,914	183,879	4,192	2,885	3,253	4,304	5,068
France	118,053	99,927	110,545	133,932	118,960	13,701	11,351	13,196	12,025	12,523
Italy	77,982	84,187	105,320	132,828	165,955	10,102	9,731	6,357	6,139	6,838
Cyprus	1,085	929	476	1,044	733	2,612	2,602	2,798	3,275	3,277
Latvia	*	*	*	*	1,398	0	0	0	0	0
Lithuania	233	*	*	*	*	*	*	0	0	0
Luxembourg	108,816	89,884	108,821	128,504	111,420	6,264	5,116	5,902	16,973	19,721
Hungary	0	0	0	112	1,210	0	0	0	0	0
Malta	0	0	0	0	0	*	*	*	*	*
Netherlands	26,601	26,090	30,283	33,248	44,040	1,795	1,582	1,198	1,274	946
Austria	3,242	3,363	4,298	6,340	8,285	0	0	0	*	*
Poland	0	0	827	1,385	5,463	0	0	0	0	0
Portugal	15,839	16,923	20,340	19,542	24,170	*	*	*	*	*
Slovenia	*	*	*	523	*	0	0	0	0	0
Slovakia	*	3,057	3,989	8,059	6,284	0	0	0	0	0
Finland	14,345	13,030	14,364	12,668	13,611	0	0	*	*	*
Sweden	27,591	33,403	43,788	55,034	65,115	109	66	111	*	1,552
United Kingdom	1,284,000	1,344,000	1,543,000	1,811,000	2,027,000	1,128,000	1,124,000	1,156,000	1,447,000	1,620,000
<b>MU12</b>	<b>600,845</b>	<b>594,854</b>	<b>718,366</b>	<b>853,899</b>	<b>962,768</b>	<b>86,140</b>	<b>70,738</b>	<b>65,764</b>	<b>85,558</b>	<b>99,236</b>
<b>EU25</b>	<b>1,947,569</b>	<b>2,009,589</b>	<b>2,348,149</b>	<b>2,778,888</b>	<b>3,123,941</b>	<b>1,221,062</b>	<b>1,202,707</b>	<b>1,230,999</b>	<b>1,546,921</b>	<b>1,733,943</b>
Bulgaria	n.a.	n.a.	741	736	*	n.a.	n.a.	*	*	*
Romania	n.a.	1,098	1,900	2,560	2,910	n.a.	*	*	*	*

\* Where the number of branches is less than three, underlying data are not disclosed for confidentiality reasons.

**Table 12 Number of subsidiaries of CIs from EU and third countries**

	Number of subsidiaries of CIs from EU countries					Number of subsidiaries of CIs from third countries				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	22	21	20	23	20	7	6	6	5	5
Czech Republic	18	18	19	17	18	4	4	3	3	3
Denmark	10	10	8	7	6	1	1	3	3	3
Germany	22	20	21	22	22	27	25	21	19	19
Estonia	3	3	3	4	4	0	0	0	0	0
Ireland	25	20	21	22	21	12	11	11	10	10
Greece	2	3	5	5	10	3	1	0	0	0
Spain	39	43	42	41	41	12	11	9	8	7
France	146	126	108	107	100	62	58	58	52	53
Italy	7	7	6	10	13	2	2	3	3	3
Cyprus	10	9	9	9	8	2	2	1	1	1
Latvia	3	3	5	6	6	4	4	3	3	4
Lithuania	3	3	5	5	5	2	2	0	0	0
Luxembourg	82	80	79	75	75	36	35	32	32	34
Hungary	21	22	20	20	20	2	3	3	3	3
Malta	6	8	8	9	9	1	1	1	2	1
Netherlands	14	13	12	12	12	17	16	16	16	16
Austria	12	12	11	14	15	11	11	8	9	8
Poland	35	35	32	33	31	11	10	8	9	9
Portugal	9	11	9	9	9	4	4	4	4	3
Slovenia	5	5	5	6	8	0	0	0	0	0
Slovakia	13	14	15	15	14	1	1	1	1	1
Finland	3	3	5	5	5	0	0	0	1	1
Sweden	7	9	9	11	8	3	3	3	3	2
United Kingdom	16	14	19	17	19	79	75	70	69	69
<b>MU12</b>	<b>383</b>	<b>359</b>	<b>339</b>	<b>345</b>	<b>343</b>	<b>193</b>	<b>180</b>	<b>168</b>	<b>159</b>	<b>159</b>
<b>EU25</b>	<b>533</b>	<b>512</b>	<b>496</b>	<b>504</b>	<b>499</b>	<b>303</b>	<b>286</b>	<b>264</b>	<b>256</b>	<b>255</b>
Bulgaria	n.a.	n.a.	14	14	16	n.a.	n.a.	5	4	3
Romania	n.a.	13	16	18	22	n.a.	2	2	2	2

Table 13 Total assets of subsidiaries of CIs from EU and third countries

(EUR millions)										
	Total assets of subsidiaries of CIs from EU countries					Total assets of subsidiaries of CIs from third countries				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	141,749	150,464	167,047	191,698	212,622	6,280	6,887	3,835	3,809	4,159
Czech Republic	61,914	63,122	70,019	83,406	94,201	4,394	4,265	4,497	4,930	6,429
Denmark	94,853	100,871	87,858	103,034	110,920	*	*	9,328	11,276	14,027
Germany	225,310	227,597	254,257	549,261	556,579	52,062	65,009	42,868	74,233	106,216
Estonia	4,698	5,622	7,557	10,573	13,620	0	0	0	0	0
Ireland	114,580	132,402	182,235	234,560	264,732	59,508	61,448	65,317	79,533	123,771
Greece	*	27,730	38,226	49,401	85,950	1,927	*	0	0	0
Spain	52,519	63,330	66,960	82,473	91,240	14,814	14,717	5,678	4,851	5,684
France	301,275	288,052	301,045	394,293	439,472	46,987	38,905	45,150	51,031	57,018
Italy	23,348	26,389	29,115	96,287	210,812	*	*	3,280	3,096	3,975
Cyprus	4,561	5,346	8,272	12,338	18,535	*	*	*	*	*
Latvia	1,568	1,857	4,432	7,795	12,248	1,230	1,694	459	481	1,056
Lithuania	2,554	3,300	6,309	9,797	13,304	*	*	0	0	0
Luxembourg	478,106	493,547	509,080	563,136	615,839	29,738	27,350	30,193	40,565	47,501
Hungary	24,614	29,400	36,287	41,628	48,783	*	1,641	2,027	2,230	2,800
Malta	5,806	6,959	7,854	8,803	11,400	*	*	*	*	*
Netherlands	94,456	126,420	150,844	176,777	205,408	16,217	18,874	19,733	23,345	26,256
Austria	112,152	107,734	116,465	133,849	141,832	3,454	4,108	2,603	3,880	4,098
Poland	68,379	60,698	76,367	87,843	103,726	10,557	9,603	11,650	12,831	14,714
Portugal	69,150	72,796	67,356	58,962	61,082	3,335	2,563	2,540	3,047	3,139
Slovenia	3,194	3,828	4,596	6,236	10,075	0	0	0	0	0
Slovakia	19,678	19,126	24,291	27,244	32,212	*	*	*	*	*
Finland	741	716	111,950	124,034	130,436	0	0	0	*	*
Sweden	1,014	1,109	1,561	2,011	2,500	638	909	974	1,666	*
United Kingdom	62,000	61,000	295,000	315,000	367,000	298,000	543,000	572,000	734,000	842,000
<b>MU12</b>	<b>1,637,839</b>	<b>1,717,177</b>	<b>1,994,580</b>	<b>2,654,731</b>	<b>3,016,004</b>	<b>234,322</b>	<b>241,862</b>	<b>221,197</b>	<b>287,531</b>	<b>382,046</b>
<b>EU25</b>	<b>1,992,672</b>	<b>2,079,416</b>	<b>2,624,983</b>	<b>3,370,439</b>	<b>3,854,528</b>	<b>556,119</b>	<b>807,324</b>	<b>824,709</b>	<b>1,059,852</b>	<b>1,270,291</b>
Bulgaria	n.a.	n.a.	9,763	12,124	16,772	n.a.	n.a.	284	335	445
Romania	n.a.	6,200	10,537	17,690	40,931	n.a.	*	*	*	*

\* Where the number of branches is less than three, underlying data are not disclosed for confidentiality reasons.

**Table 14 Population and GDP at market price**

	Population (thousands)					Gross domestic product at market price (EUR millions)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Belgium	10,330	10,373	10,417	10,474	10,548	267,652	274,658	289,509	298,541	314,084
Czech Republic	10,201	10,202	10,207	10,234	10,244	80,004	80,924	88,343	100,544	113,969
Denmark	5,376	5,390	5,403	5,419	5,437	184,744	188,500	196,158	208,267	220,163
Germany	82,482	82,520	82,501	82,464	82,366	2,143,180	2,161,500	2,207,200	2,241,000	2,309,100
Estonia	1,361	1,356	1,356	1,348	1,345	7,757	8,494	9,375	11,061	13,074
Ireland	3,926	3,991	4,059	4,149	4,253	129,946	138,942	147,568	161,162	175,794
Greece	10,988	11,024	11,064	11,083	11,116	143,482	155,543	168,417	181,088	195,213
Spain	41,314	42,005	42,692	43,398	44,068	729,206	782,531	840,106	905,455	976,189
France	61,616	62,042	62,445	62,818	63,195	1,548,559	1,594,814	1,660,189	1,717,921	1,791,953
Italy	57,157	57,605	58,175	58,530	58,614	1,295,226	1,335,354	1,390,539	1,423,048	1,475,401
Cyprus	710	723	740	758	770	11,153	11,755	12,700	13,629	14,522
Latvia	2,339	2,325	2,313	2,300	2,288	9,911	9,978	11,176	13,012	16,180
Lithuania	3,469	3,454	3,436	3,414	3,394	15,023	16,452	18,126	20,621	23,746
Luxembourg	446	450	453	457	462	24,081	25,607	26,996	29,396	33,055
Hungary	10,159	10,130	10,107	10,087	10,071	70,714	74,682	82,322	88,914	89,884
Malta	396	398	401	403	406	4,489	4,421	4,482	4,781	5,096
Netherlands	16,147	16,223	16,276	16,316	16,341	465,214	476,945	489,854	505,646	527,916
Austria	8,084	8,118	8,175	8,233	8,282	220,841	226,175	236,149	245,330	257,897
Poland	38,232	38,195	38,180	38,161	38,132	209,617	191,644	204,237	244,420	271,530
Portugal	10,368	10,441	10,502	10,549	10,613	135,434	138,582	144,128	148,928	155,216
Slovenia	1,995	1,996	1,997	2,001	2,008	23,699	24,860	26,232	27,634	29,742
Slovakia	5,379	5,379	5,382	5,387	5,391	26,034	29,229	33,863	38,113	43,945
Finland	5,201	5,213	5,227	5,245	5,266	143,974	145,938	152,345	157,162	167,062
Sweden	8,925	8,958	8,994	9,030	9,081	258,878	269,548	281,124	287,706	305,989
United Kingdom	59,322	59,554	59,834	60,218	60,533	1,678,980	1,615,984	1,745,051	1,804,586	1,906,359
<b>MU12</b>	<b>308,059</b>	<b>310,003</b>	<b>311,987</b>	<b>313,717</b>	<b>315,126</b>	<b>7,246,796</b>	<b>7,456,588</b>	<b>7,752,999</b>	<b>8,014,677</b>	<b>8,378,881</b>
<b>EU25</b>	<b>455,922</b>	<b>458,064</b>	<b>460,337</b>	<b>462,477</b>	<b>464,225</b>	<b>9,827,798</b>	<b>9,983,059</b>	<b>10,466,189</b>	<b>10,877,965</b>	<b>11,433,080</b>
Bulgaria	7,846	7,801	7,761	7,719	7,679	16,623	17,767	19,875	21,882	25,100
Romania	21,795	21,734	21,673	21,624	21,581	48,442	52,613	60,842	79,551	97,118

## ANNEX II

# METHODOLOGICAL NOTE ON THE STRUCTURAL INDICATORS

### ANNEXES

Data included in Annex 1 are derived from a variety of sources using different statistical concepts, collection techniques, etc. This makes it difficult to compare series across indicators, countries and - perhaps to a somewhat lesser extent - over time as well. The reader should keep this caveat in mind when interpreting and possibly using the data. The exchange rates applied for the conversion of data from non-euro countries are the official exchange rates referring to the last day of trading for each of the reported years. The set of indicators can be grouped according to the data source used, namely:

- indicators derived from data already available at the ECB;
- indicators that required a new data collection from the statistical departments of national central banks; and
- other sources, such as commercial databases.

The ECB's Directorate General Statistics was entrusted with establishing the second category of indicators. Guidelines for the compilation and transmission of these indicators are included in Annex VI of Statistical Guideline ECB/2003/2 (as amended).

### NUMBER OF CREDIT INSTITUTIONS (TABLE 1)

Credit institutions are a subset of monetary financial institutions or MFIs, on which the ECB publishes more detailed information on its website ([www.ecb.int](http://www.ecb.int)) under 'MFIs and Eligible Assets' "Monetary Financial Institutions".

The number of credit institutions in each Member State includes the credit institutions under the law of that country, regardless of whether or not they are subsidiaries of foreign banks, and the branches of foreign banks in that Member State. If a foreign bank has several branches in a given country, then they are counted as a single branch. However, if the same bank has several subsidiaries, the latter are

counted separately because they are considered to be separate legal entities.

In the case of credit institutions that depend on a central organisation (such as groups of co-operative banks), these may be counted separately, in accordance with Statistical Regulation ECB/2001/13 (as amended).

### NUMBER OF BRANCHES OF CREDIT INSTITUTIONS (TABLE 1)

A local unit or branch is an unincorporated entity (without independent legal status) wholly owned by the parent. Only branches that belong to credit institutions are included. The indicator refers to the number of branches at the end of the reference period.

The set of credit institutions considered in the calculation of the local units is consistent with the definition used for the indicator in Table 1. If the same foreign bank has several branches in a given country, these are counted as a single branch. For additional information, please consult the aforementioned ECB Regulation.

### TOTAL ASSETS OF CREDIT INSTITUTIONS (TABLE 2)

The set of credit institutions considered in the calculation of this indicator is consistent with the definition of the indicator in Table 1.

Total assets are calculated on a resident basis, meaning that for each Member State the credit institutions under the law of that Member State are included (regardless of whether or not they are a subsidiary of a foreign bank). However, the activity of the foreign branches of these credit institutions is not included, as this is reported by the host country. For additional information, please consult the aforementioned ECB Regulation.

## **NUMBER OF EMPLOYEES OF CREDIT INSTITUTIONS (TABLE 2)**

The indicator refers to the average number of staff employed during the reference year by the credit institutions mentioned in Table 1. Employees of financial institutions which are not themselves credit institutions are excluded, even if these institutions belong to the same group as the credit institution.

## **CR5 (TABLE 3)**

The CR5 of a Member State is the percentage share of the five largest credit institutions, ranked according to assets, in the sum of the assets of all the credit institutions in that particular Member State. The set of credit institutions and the definition of assets used in the calculation are consistent with the definitions used for the indicators in Table 1. The set of five largest credit institutions may vary over time.

The ratio is calculated on the basis of a sub-set of the ECB list of monetary financial institutions (MFI) used for monetary policy purposes. The sub-set of the MFI list concerns credit institutions only. This list follows a host country residence approach and is on a non-consolidated basis, meaning that banking subsidiaries and foreign branches of a particular credit institution are considered to be separate credit institutions resident in another EU Member State. Domestic banks' branches and subsidiaries resident outside the EU are not captured, while domestic branches and subsidiaries of credit institutions resident outside the EU are included.

## **HERFINDAHL INDEX (TABLE 3)**

A Member State's Herfindahl index is calculated as the sum of the squares of all the credit institutions' market shares in terms of total assets. The set of credit institutions and the definition of assets used in the calculation are consistent with the definitions used for the indicators in Table 1.

The ratio is calculated on the basis of a sub-set of the ECB list of monetary financial institutions (MFI) used for monetary policy purposes. The sub-set of the MFI list concerns credit institutions only. This list follows a host country residence approach and is on a non-consolidated basis, meaning that banking subsidiaries and foreign branches of a particular credit institution are considered to be separate credit institutions resident in another Member State. Domestic banks' branches and subsidiaries resident outside the EU are not captured, while domestic branches and subsidiaries of credit institutions resident outside the EU are included.

## **NUMBER OF BRANCHES/SUBSIDIARIES OF CREDIT INSTITUTIONS FROM EU/THIRD COUNTRIES (TABLES 10 TO 13)**

Two distinctions are made in these tables. The first is made according to the form of presence of the foreign credit institution in the Member State, i.e. as a branch (which is not considered to be separate legal entity) or as a subsidiary (which is considered to be separate legal entity). If the same foreign bank has several business units, the latter are counted as a single branch. The second distinction is made according to the nationality of the foreign credit institution (i.e. either EU or third country).

The figures for a particular Member State only include the non-domestic component: the branches and subsidiaries of credit institutions under the law of that Member State are not included.

If less than three institutions are present, the underlying figures are not shown.



