CHAPTER I

SUPERVISION OF THE BANKING SECTOR

1. Developments in the banking sector in 2001

1.1. Characteristics of the Luxembourg banking sector

Luxembourg banking law recognises two types of banking licence, namely licences governing the activities of universal banks, and those governing the activities of banks issuing mortgage bonds.

The universal banks comprise three categories according to legal status and geographical origin:

- banks under the law of Luxembourg;

- branches of banks originating from a Member State of the European Union; and

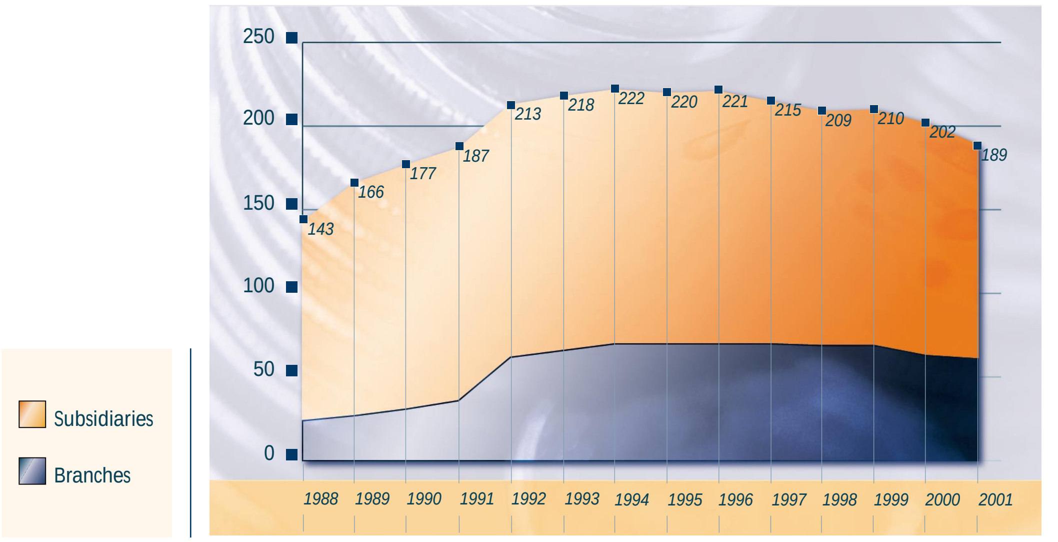
- branches of banks originating from non-Member States of the European Union.

In addition, there is the special case of the unit formed by the caisses rurales and their central establishment which, according to the law relating to the financial sector, is to be considered as a single credit institution.

1.2. Developments in the number of credit institutions

The number of credit institutions established in Luxembourg significantly declined during 2001, thereby confirming the downward trend observed since the middle of the 1990s. Indeed, the total number of banks amounts to 189 as at 31 December 2001, compared with 202 on the same date in the previous year. The 189 entities comprise 128 subsidiaries and 61 branches. This trend towards increased concentration is mainly due to the strategies of international banking groups. During 2001, two types of merger were observed, namely mergers directly reflecting those taking place at the level of the parent company, and mergers of indirect nature, reflecting concentrations within the scope of Luxembourg consolidation.

Developments in the total number of banks established in Luxembourg



Six credit institutions, of which three were branches, ceased operations in 2001. Among these six institutions in liquidation, three belonged to groups originating from the European Union.

As for the mergers which took place, these concerned nine entities, reducing the number of branches by one entity and the number of subsidiaries by eight entities. Two of these mergers comprised at least one institution of a banking group originating from outside the European Union.

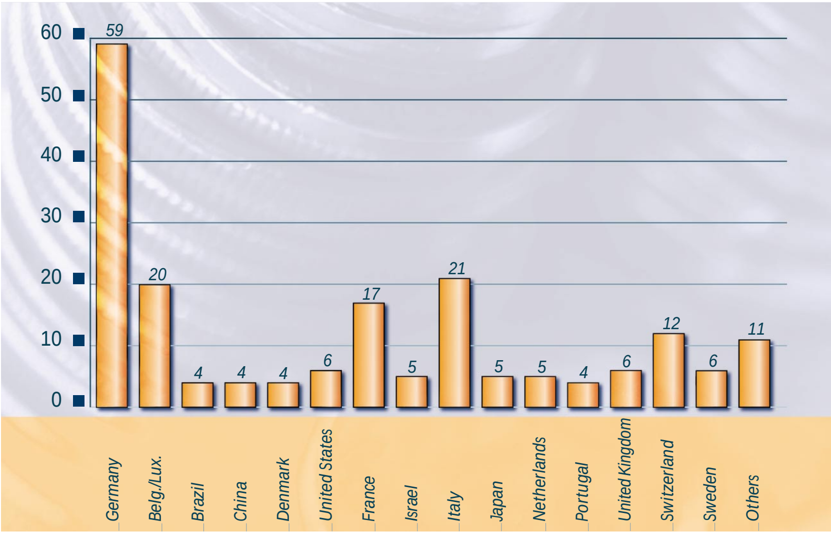
Liquidations/mergers	*Date of withdrawal from the official list of credit institutions*
Industrial Bank of Korea Europe S.A.	Liquidated on 15.01.01
Bank Labouchere (Luxembourg) S.A.	Merged with Banque Internationale à Luxembourg S.A. on 16.02.2001
Robert Fleming & Co Limited, branch	Liquidated on 28.02.01
SEB Private Bank S.A.	Merged with BfG Bank Luxembourg S.A. through formation of SEB Private Bank Luxembourg S.A. on 08.03.2001
HELABA Luxembourg - Landesbank Hessen-Thüringen International S.A.	Merged with Bayerische Landesbank International S.A. through formation of LBLux S.A. on 01.04.2001
Crédit Commercial de France (Luxembourg) S.A.	Merged with HSBC Republic Bank Luxembourg S.A. on 30.06.2001
Bank2C (formerly Banque MeRich S.A.)	Liquidated on 21.09.01
Dexia Direct Bank	Merged with Dexia Banque Internationale à Luxembourg on 29.10.2001
GZ-Bank International S.A.	Merged with DG Bank Luxembourg S.A. through formation of DZ Bank International S.A. on 22.11.2001
Fortis Bank Luxembourg S.A.	Merged with Banque Générale du Luxembourg S.A. on 27.11.01
Osmanli Bankasi A.S (Ottoman Bank),	Merged with Garanti Bank, Luxembourg branch, Luxembourg branch on 14.12.2001
Bank Handlowy International S.A.	Liquidated on 18.12.01
Banca de la Pequeña y Mediana Empresa (Bankpyme), branch	Liquidated on 31.12.01
Banque Baumann & Cie S.A.	Merged with VP Bank Luxembourg S.A. on 31.12.2001
M.M. Warburg & CO, branch	Liquidated on 31.12.01

Two branches originating from the European Union were opened in 2001.

Name of institution	*Shareholders*	*Date of official registration as a credit institution*
Bank Corluy, Luxembourg branch	Bank Corluy Effectenbankiers N.V., Antwerp	10 May 2001
Evli Bank Plc, Luxembourg branch	Evli Bank Plc, Helsinki	11 October 2001

The breakdown of credit institutions according to geographical origin has changed as follows. Banks of German origin are still the highest in number, with 59 entities, now followed by Italian banks, comprising 21 entities; 20 banks originate from Belgium and Luxembourg. Other banks originate from France (17), the Scandinavian countries (14), Switzerland (12), the United Kingdom (6), the United States (6), and Sweden (6).

Geographic origin of banks



1.3. Developments of the local branch networks in Luxembourg

The downward trend in branch networks recorded since the 1990s continued in 2001, as shown below.

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Number of local branches	262	260	254	240	231	226	225	214
Number of banks concerned	11	11	11	11	11	10	9	9

Over the last four years, two credit institutions have relinquished their national branch networks. The reduction in the number of local branches, or indeed their complete disappearance, is one of the phenomena reflecting the general trend towards increased concentration in the sector. In this case, concentration takes place on a more regional level, mainly affecting a specific type of activity, namely retail banking, and is motivated by cost-cutting measures. The services traditionally provided by local branches are being increasingly substituted by technical facilities (ATMs, home banking, phone banking, internet banking, etc.).

	Total		Management			Office staff			Technical staff			Total workforce		
	Luxemb.	Foreigners	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
1991	-	-	1957	253	2210	6250	7089	13339	85	311	396	8292	7653	15945
1992	-	-	2030	294	2324	6312	7111	13423	84	312	396	8426	7717	16143
1993	8158	8567	2097	335	2432	6713	7396	14109	68	116	184	8878	7847	16725
1994	8116	9522	2308	384	2692	7086	7700	14786	47	113	160	9441	8197	17638
1995	8170	10113	2533	451	2984	7318	7813	15131	49	119	168	9900	8383	18283
1996	8113	10469	2658	490	3148	7476	7809	15285	48	101	149	10182	8400	18582
1997	8003	11086	2765	547	3312	7631	8013	15644	44	89	133	10440	8649	19089
1998	7829	12005	2900	577	3477	7846	8377	16223	47	87	134	10793	9041	19834
1999	7797	13400	3119	670	3789	8362	8961	17323	34	51	85	11515	9682	21197
2000	7836	15232	3371	783	4154	9030	9801	18831	35	48	83	12436	10632	23068
2001	7716	16140	3579	917	4496	9220	10045	19265	33	62	95	12832	11024	23856

1.4. Developments in banking-sector employment

Growth in employment in the banking sector slowed considerably during 2001 (+3.4% as compared with +8.6% in 2000), the total number of employees reaching 23,856 as at 31 December 2001. Growth was more sustained among highly-qualified staff, at 8.2%, representing almost 4,500 jobs. This growth in highly-qualified employees is reflected in profit and loss accounts, with the average cost per employee as at 31 December 2001 amounting to EUR 73,000 per annum, compared with EUR 70,000 on the same date in the previous year (see also Chapter I, point 1.6).

The quota of foreign nationals in the workforce again rose slightly. The proportion of women employed in the sector grew slightly, reaching 46%, the most significant growth being recorded in terms of women in executive positions (+17.1%).

Distribution of the number of employees per bank

Number of employees	*Number of banks*	
	2000	*2001*
> 1000	4	4
500 to 1000	3	5
400 to 500	5	4
300 to 400	3	4
200 to 300	11	12
100 to 200	19	16
50 to 100	30	26
< 50	127	118

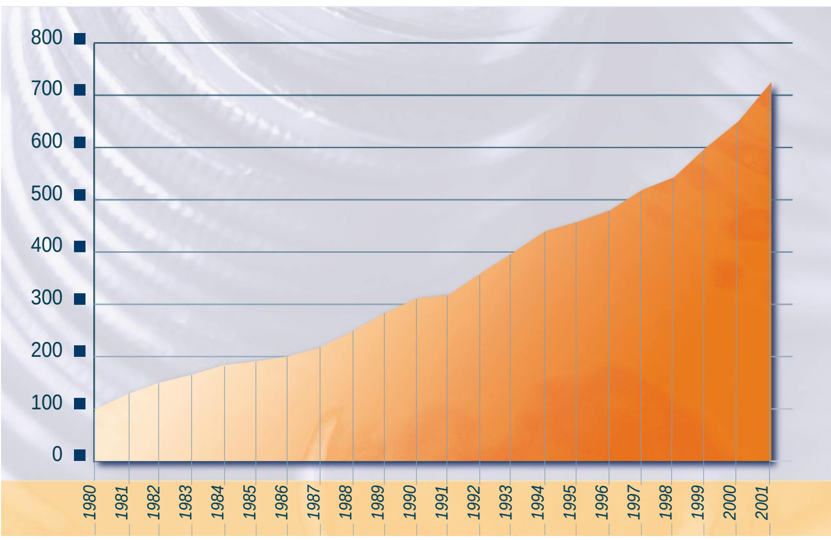
The distribution of staff by institution confirms the trend towards increased concentration in the sector. The number of banks employing more than 200 people amounted to 29 entities as at 31 December 2001, i.e. 15.3% of the total number of banks, as compared with 12.9% at the end of 2000.

1.5. Developments in balance sheet totals

Total balance sheets posted by credit institutions grew steadily by 11.3% over 2001, reaching EUR 720,970 million, compared with EUR 647,633 million at the end of 2000.

Developments in balance sheet totals posted by credit institutions - *in billions of EUR*

1980	97,10
1981	125,95
1982	148,41
1983	163,41
1984	181,73
1985	189,09
1986	198,49
1987	215,32
1988	246,36
1989	281,04
1990	309,37
1991	316,09
1992	357,56
1993	397,15
1994	438,01
1995	455,47
1996	477,37
1997	516,59
1998	540,89
1999	598,01
2000	647,63
2001	720,97



Aggregated balance sheet totals of the Luxembourg financial centre - in millions of EUR

ASSETS	*2000*	*2001*[1]	*LIABILITIES*	*2000*	*2001*[2]
Loans and advances to credit institutions	319,449	359,003	Amounts owed to credit institutions	294,122	345,121
Loans and advances to customers	128,476	145,301	Amounts owed to customers	225,715	226,808
Fixed-income securities	142,672	151,682	Debts evidenced by certificates	57,801	70,090
Variable-yield securities	5,628	4,349	Various items	11,335	16,939
Participating interests and shares in affiliated undertakings	7,379	9,973	Permanent shareholders' equity (*)	58,660	62,012
Fixed assets and other assets	44,029	50,662	*Of which profit for the year*	*2,545*	*2,938*
Total	**647,633**	**720,970**	**Total**	**647,633**	**720,970**

(*) Including share capital, reserves, subordinated liabilities and provisions.

- **Assets**

As regards assets, in relative terms, the composition of the balance sheet did not vary very significantly during 2001.

Loans and advances to credit institutions represent 49.8% of the total, compared with 49.3% in 2000. This item, which had already risen by 10% in 2000, continued to grow, reaching a total of EUR 359,003 million (+12.4%).

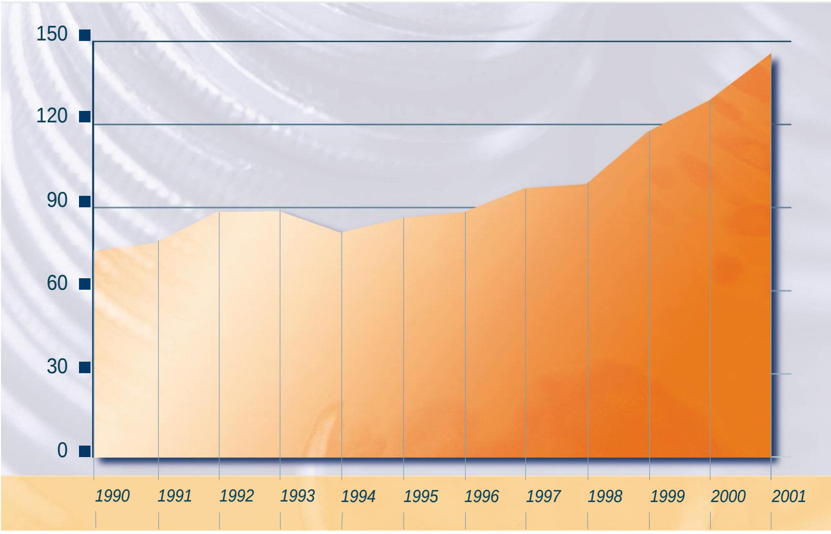
Qualitative breakdown of interbank assets

	1999	*2000*	*2001*
Central and multilateral banks	0.28%	0.29%	0.32%
Banks Zone A[3]	97.75%	98.47%	98.71%
Banks Zone B[4]	1.96%	1.23%	0.96%

This breakdown shows that almost all loans and advances to credit institutions consist of commitments on banks of Zone A, i.e. banks of industrialised countries.

[1] *Preliminary figures for the year ending 31.12.2001.*
[2] *Preliminary figures for the year ending 31.12.2001.*
[3] *Countries of Zone A: Germany, Saudi Arabia, Australia, Austria, Belgium, Canada, South Korea, Denmark, Spain, United States, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Japan, Liechtenstein, Luxembourg, Mexico, Norway, New Zealand, Netherlands, Poland, Portugal, United Kingdom, Slovakia, Sweden, Switzerland, Czech Republic, Turkey.*
[4] *Countries of Zone B: all countries other than Zone A*

Developments in loans and advances to customers *- in billions of EUR*



The item loans and advances to customers saw a considerable rise of 13.1% and totalled EUR 145,301 million at the end of the year, as against EUR 128,476 million in 2000, which highlights the importance of this activity for the financial centre of Luxembourg alongside investment funds business and private banking operations.

Breakdown of loans and advances to customers

	1999	*2000*	*2001*
Public authorities Zone A	5.78%	5.23%	4.63%
Public authorities Zone B	0.66%	0.45%	0.30%
Private customers and financial institutions	93.51%	94.25%	95.02%
of which: legal entities	*62.27%*	*58.64%*	*54.20%*
of which: natural persons	*19.23%*	*19.59%*	*18.34%*
of which: financial institutions	*18.50%*	*21.77%*	*27.46%*
Leasing	0.05%	0.05%	0.05%

Qualitative breakdown of loans and advances to private customers and financial institutions

Loans and advances to private customers and financial institutions	*1999*	*2000*	*2001*
Secured by public authorities	2.33%	2.46%	2.97%
Secured by credit institutions	18.80%	19.54%	16.52%
Secured by other tangible securities	29.49%	27.95%	28.43%
Unsecured	49.38%	50.05%	52.08%

There has been a relative rise in loans and advances to financial institutions, accompanied by a relative decline in loans and advances to legal entities and natural persons. Loans to public authorities are also fairly low. Such commitments generally take the form of securities. Among the commitments on private customers, it is worth noting that the secured portion, which reflects private banking operations, is almost as high as the unsecured portion. The analysis does not take into account personal guarantees. Finally, it is worth noting that a number of credit institutions also continue to operate in the field of corporate loans at an international level.

The portfolio of fixed-income transferable securities grew by a moderate 6.3%, reaching a total of EUR 151,682 million. Repeated reorganisation of the portfolio following changes in interest rates and stock market performance explains this movement.

Qualitative breakdown of fixed-income transferable securities

	1999	*2000*	*2001*
Public sector Zone A	27.24%	25.71%	23.99%
Public sector Zone B	1.42%	1.27%	0.97%
Credit institutions Zone A	52.43%	51.58%	51.07%
Credit institutions Zone B	1.20%	1.19%	1.05%
Other issuers Zone A	13.81%	15.62%	17.61%
Other issuers Zone B	3.89%	4.63%	5.31%

The portfolio of fixed-income transferable securities consists essentially of securities issued by the public sector and by banks of industrialised countries.

The volume of the portfolio of variable-yield transferable securities, i.e. equities, remains marginal, since Luxembourg banks are not very active in own-account trading of such stocks. The downward development of the portfolio is characteristic of the disappointing stock market performance over the year.

On the other hand, the rise in the item Participating interests and shares in affiliated enterprises, which began several years ago, has continued. Since this item is almost entirely reserved for participating interests in banks, its development thus reflects the expansion of some Luxembourg banks at international level.

- **Liabilities**

As regards liabilities, most conspicuous is the stagnation in amounts owed to customers. This item amounts to EUR 226,808 million (compared with EUR 225,715 million in 2000), which represents 31.5% of total liabilities. This stagnation is explained by a fall in deposits from the public sector, the volume of which had been exceptionally high for the year 2000.

Breakdown of amounts owed to customers

	1999	*2000*	*2001*
Amounts owed to the public sector	3.2%	7.4%	6.0%
Amounts owed to legal entities	62.7%	64.1%	64.0%
Amounts owed to natural persons	34.1%	28.5%	30.0%

The deposits made by legal entities originate from a wide range of operations, such as business relations with institutional investors, industrial and commercial undertakings, investment funds and structures used in private banking operations.

The amounts owed represented by securities continued to rise (+21.3% compared with 2000), now accounting for 9.7% of liabilities. This increase is in part linked to the activity of banks issuing mortgage bonds, the issuing volume of which is now becoming significant.

Amounts owed to credit institutions, representing 47.9% of liabilities, constitute the principal source of refinancing for banks. This item increased by 17.3% and now amounts to EUR 345,121 million.

Permanent shareholders' equity, made up of core equity capital and subordinated debts, saw a rise of 5.7% (see also Chapter I, point 1.9 relating to developments in own funds and solvency ratio).

1.6. Movements in profit and loss account[5]

Despite a difficult environment, the banking sector achieved a record net result of almost EUR 2,930 million, an increase of 21% on the previous year. This rise was due primarily to a lower net formation of provisions, whereas the operating result only rose slightly by 3%.

Profit and loss account - in millions of EUR

	1999	*Relative share*	*2000*	*Relative share*	*2001[6]*	*Relative share*
Interest and dividends received	35,943		47,996		50,987	
Interest paid	32,664		44,467		46,668	
Interest-rate margin	**3,279**	**51%**	**3,529**	**47%**	**4,319**	**54%**
Commission received	2,338	36%	3,035	40%	2,754	35%
Income from financial operations	563	9%	488	6%	402	5%
Other income	255	4%	465	6%	431	5%
Banking income	**6,435**	**100%**	**7,517**	**100%**	**7,906**	**100%**
General administrative expenses	2,627	41%	3,016	40%	3,183	40%
Of which: staff costs	*1,444*	*22%*	*1,588*	*21%*	*1,716*	*22%*
Of which: other administrative expenses	*1,183*	*18%*	*1,393*	*19%*	*1,427*	*18%*
Depreciation	283	4%	306	4%	401	5%
Income before provisions	**3,525**	**55%**	**4,195**	**56%**	**4,322**	**55%**
Creation of provisions	1,095	17%	1,520	20%	1,192	15%
Write-back of provisions	577	9%	767	10%	724	9%
Taxes	977	15%	1,013	13%	924	12%
Result for the financial year	**2,030**	**32%**	**2,429**	**32%**	**2,930**	**37%**

The **interest margin** rose by 22%, reaching EUR 4,319 million. On the one hand, this increase is explained in part by a growth in volume, total assets having increased by 11%. On the other hand, banks which have formed or acquired a network of subsidiaries abroad over the last few years, are beginning to reap substantial dividends which are serving to increase the interest margin.

In millions of EUR	*1999*	*2000*	*2001*
Dividends received on participating interests	226	433	651

Successive reductions in nominal interest rates during the financial year enabled those banks rescheduling maturities to substantially increase their interest income by short-term refinancing of longer-term assets, principally on the interbank market. The use of derivative instruments in the same context enabled reinforcement of this effect.

[5] *Presentation of the profit and loss account has been modified in order to establish conformity to the form prescribed by the Law on Annual Accounts and Consolidated Accounts of Credit Institutions.*
[6] *Provisional figures for the year ending 31.12.2001.*

Bearing in mind the state of the stock markets in 2001, it is not surprising to find a reduction in **commission received**, which nevertheless remained within reasonable limits at –9%. This is partly due to the fact that commission is not only linked to the number of transactions, but also to the stock of assets under management.

The differing movements in interest margins and commission received implies a contrasting development in the results of the different banks, depending on which source of revenue predominates.

Income from financial operations, which reflects the banks' trading operations, only contributes in marginal terms to banking income. This activity is not very developed among Luxembourg banks.

In terms of costs, the banks succeeded in controlling their **operating costs**, which rose by 8%. Among the components of this item, staff costs rose by 8%, other administrative expenses by 2%, and depreciation on tangible and intangible assets by 31%.

The cost/income ratio is still favourable, at 45% as against 44% in 2000, compared with the norm of 50% which the major bank groups generally set as a target.

The banks reduced their **creation of provisions** by 22%. Among total provisions, reaching EUR 1,192 million in 2001, general provisions represented EUR 250 million. In 2000, when total provisions were EUR 1,520 million, general provisions represented a sum of EUR 409 million. Disregarding the general provisions formed, the total reduction is only 15%. This reduction does not reflect a less cautious approach to risk prevention, but is rather explained by the presence of a significant stock of provisions created during previous years.

The investigations conducted by the CSSF regarding exposure in sectors at risk following the events of 11 September revealed that such risks are globally limited and could easily be covered by current income.

Structural ratios

	1999	*2000*	*2001*
Cost/income ratio	45.2%	44.2%	45.3%
Profit before taxes/assets	0.5%	0.5%	0.5%
Profit before taxes/weighted assets	22.2%	21.6%	23.3%
Profit before taxes/core equity capital	16.1%	16.9%	17.8%
Interest margin/banking income	51.0%	47.0%	54.6%
Income excluding interest/banking income	49.0%	53.0%	45.4%

Movement in certain indicators of profit and loss account per employee

In millions of EUR	*1999*	*2000*	*2001*
Banking income/employee	0.314	0.334	0.333
Staff costs/employee	0.068	0.070	0.073

There has been a rise in banking income per employee over the past three years. The rise in staff costs per employee can be explained basically by a comparatively more sustained growth in executive employees in terms of total employment[7] .

[7] *See also Chapter I, point 1.4, relating to developments in banking sector employment.*

1.7. Financial derivatives

Banks in the Luxembourg[8] financial centre used derivatives totalling EUR 742.4 billion in 2001, as compared with EUR 469.2 billion in 2000. This represents an exceptional growth rate of almost 58%, compared with 2.5% between 1999 and 2000. For the first time, the nominal amount exceeds balance sheet totals of the same sample of banks, reaching a ratio between volume of derivatives and balance sheet totals of 129.32%, as compared with 88.77% in 2000.

Instruments traded over-the-counter still remain the most widely used products (80% of the total in 2001, as compared with 88% in 2000), with a volume amounting to EUR 591 billion. However, instruments traded on regulated markets saw significantly higher growth in 2001 (+160%), reaching a volume of EUR 151.4 billion.

Use of financial derivatives by credit institutions[9]

Instrument	2000		2001	
	in billions of EUR	as a % of total balance sheet	in billions of EUR	as a % of total balance sheet
Interest rate swaps (*)	375.8	71.1%	531.9	92.7%
Future or forward rate agreements	22.6	4.3%	38.1	6.6%
Of which: over the counter	*20.8*	*3.9%*	*35.3*	*6.1%*
Of which: regulated market	*1.9*	*0.4%*	*2.8*	*0.5%*
Futures (currencies, interest rates, other assets)	6.9	1.3%	5.8	1.0%
Options (currencies, interest rates, other assets)	63.9	12.1%	166.6	29.0%
Of which: over the counter	*14.4*	*2.7%*	*23.8*	*4.1%*
Of which: regulated market	*49.5*	*9.4%*	*142.8*	*24.9%*

(*) Also includes cross-currency swaps.

In a period of volatile interest rates, in particular the lower interest rate environment in the second half of 2001, banks made more use of interest-rate derivatives both for hedging and arbitrage purposes. Within the framework of asset-liability management, the use of interest-rate swaps increased by almost 42%, reaching a volume of EUR 531.9 billion, so that this continued to be the most significant derivative in volume terms. Forward rate agreements saw even bigger growth (+69%), with a volume of EUR 38.1 billion.

However, alongside linear instruments, it was mainly options that saw a remarkable increase, reaching a nominal amount equivalent to EUR 166.6 billion. This increase of more than 160% is explained by covered issuing operations for the account of a small number of specialised credit institutions.

[8] *For statistical reasons, the data does not include figures for branches of EU credit institutions.*
[9] *Excluding branches of credit institutions originating from a Member State of the European Union.*

1.8. Business lines in the banking sector

A description of the structure of banking operations in Luxembourg may be undertaken by quantifying the significance of the various business lines carried out.

Such an analysis contributes, inter alia, to better understanding of the scale and importance of the main business lines currently practised in Luxembourg, and provides input for new thinking on the future development and promotion of the financial industry.

There are five leading activities carried out within banks:

- **Financial-management activities**, which consist of supplying personalised services such as investment advice, tax planning and domiciliation for customers having a certain minimum of liquidity;

- **Commercial banking operations**, which consist of providing products and services such as current accounts, savings accounts, loans and finance, payments and credit cards to customers and businesses;

- **Operations linked to investment funds**, namely asset management, acting as custodian bank, administrative agent, domiciliation agent, paying agent, transfer agent and investment-fund distribution agent;

- **Lending operations**, which consist of providing products and services such as corporate finance, trade finance, project finance, syndicated loans, documentary credits and the issuing of guarantees;

- **Institutional operations**, which comprise asset-management, interbank, arbitrage, domiciliation and depositary activities (excluding those for investment funds) for the account of institutional investors.

Financial management activities generate approximately one third of the banks' net result. Operations linked to investment funds, lending operations and institutional operations each contribute at an approximately equal level, of 20%. Commercial banking operations represent about 5% of income.

The activity of financial management is also the principal consumer in terms of human resources, with almost 40% of total labour. This is followed by activities linked to investment funds (25%), and commercial banking (20%). As for institutional operations, the percentage of human resources deployed is slightly above 10%. Finally, lending operations use a relatively small proportion of the workforce, since across all players in the banking industry they account for just 5% of employees.

In terms of financial productivity per employee, lending and institutional operations appear to be the most profitable, followed by financial management and investment funds. Commercial banking, employing almost one-fifth of the workforce, achieved a lower level of net income per employee.

1.9. Developments in own funds and in the solvency ratio

1.9.1. Number of banks required to calculate a solvency ratioilité

As at 31 December 2001, the number of banks required to meet a non-consolidated solvency ratio stood at 129, 128 of which were under Luxembourg law and one branch of non-EU origin. Among these banks, 105 carry out limited trading activities, and are therefore authorised to calculate a simplified ratio. Trading activities in the true sense remain confined to a limited number of banks.

Number of banks required to meet a solvency ratio	*Integrated ratio*		*Simplified ratio*		*Total*	
	2000	*2001*	*2000*	*2001*	*2000*	*2001*
Non-consolidated	24	24	117	105	141	129
Consolidated	13	13	9	14	22	27[10]

1.9.2. Developments in the solvency ratio

The figures below are based on consolidated figures for banks required to calculate a consolidated solvency ratio.

Following a reduction in the capital adequacy ratio during 2000 as a result of sustained lending activity, as well as movements in participating interests, the banks adjusted their capital base during the year under review.

Thus, the solvency ratio itself lies at 12.7%, easily exceeding the minimum threshold of 8% prescribed by the current prudential regulations. Taking into account only core equity capital (Tier 1), the aggregate ratio for the Luxembourg financial market rose from 10% as at 31 December 2000 to a provisional figure of 10.3% at the close of 2001.

Even though the rate of increase for 2000 (+17.3%) has not been reached, the sustained activity in lending operations is reflected by an increased rate of capital requirements to cover the credit risk, at a level of 4.1% for the year 2001. The volumes created by this sector of activity alone consume almost all coverage needs in terms of own funds. Own-fund requirements for coverage of foreign exchange risks and risks linked to the banks' trading portfolios remain marginal, all the more so since these show a net decline of 18.7% and 33.4% respectively compared with the previous year.

Eligible own funds also saw a positive development, which is required for the development of activities. Core capital, which represents 80.5% of total eligible own funds, rose by 6.1%, and additional own funds underwent a rise of 13.4%. Growth in the former is due to the sharp rise in "Silent participations" as well as in the item "Share premium accounts, reserves and profits brought forward", while subordinated liabilities of the type "Lower Tier 2" are responsible for the growth in additional own funds. Finally, following the significant rise in participations in 2000 (+49.7%), which must simply be deducted from eligible own funds, this movement stabilised, which led to a slight fall of 0.2%.

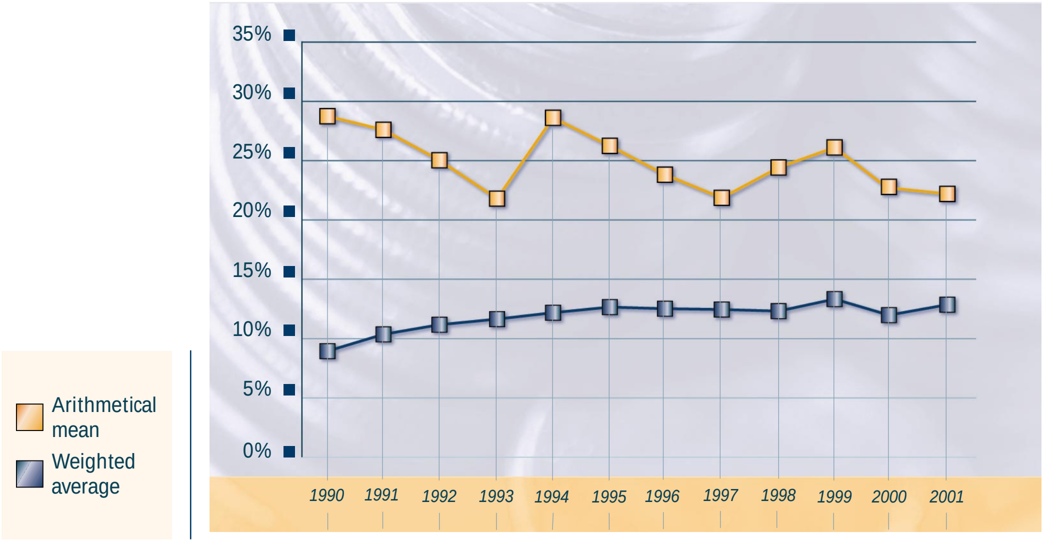
[10] *Banks, the participating interests of which are deducted from own funds on an individual basis do not need to calculate a consolidated ratio.*

in millions of EUR Numerator	2000 consolidated	2001 consolidated (provisional)
Original own funds before deductions	***20,571***	***22,567***
Paid-up capital	6,650	7,087
Silent participation	2,098	2,620
Share premium accounts, reserves and profits brought forward	9,055	10,011
Funds for general banking risks	1,896	1,996
Profits for the financial year	317	240
Specific consolidation items	555	613
Items to be deducted from original own funds	***-196***	***-941***
Own shares	-4	-4
Intangible assets	-89	-90
Losses brought forward and loss for the financial year	-28	-59
Specific consolidation items	-76	-788
ORIGINAL OWN FUNDS (TIER 1)	**20,375**	**21,626**
Additional own funds before capping	***6,891***	***7,878***
Upper TIER 2	***3,343***	***3,175***
Of which: cumulative preference shares with no fixed maturity	22	22
Of which: subordinated "upper TIER 2" debt instruments	2,707	2,485
Lower TIER 2	***3,548***	***4,703***
"Lower TIER 2" subordinated debt instruments and cumulative preference shares with fixed maturity	3,548	4,703
ADDITIONAL OWN FUNDS AFTER CAPPING (TIER 2)	**6,813**	**7,728**
Super additional own funds before capping	***0***	***0***
SUPER ADDITIONAL OWN FUNDS AFTER CAPPING (TIER 3)	**0**	**0**
OWN FUNDS BEFORE DEDUCTIONS (T1+T2+T3)	**27,188**	**29,354**
ITEMS TO BE DEDUCTED FROM OWN FUNDS	**2,504**	**2,500**
Items of share capital in other credit and financial institutions in which the bank owns a shareholding exceeding 10% of their share capital	679	741
Items of share capital in other credit and financial institutions in which the bank owns a shareholding less than or equal to 10% of their share capital	1,825	1,760
ELIGIBLE OWN FUNDS	**24,595**	**26,854**
Denominator	*2000*	*2001*
TOTAL CAPITAL ADEQUACY REQUIREMENT	**16,349**	**16,872**
To cover credit risks	15,904	16,556
To cover foreign exchange risks	134	109
To cover trading portfolio risks	310	207
Ratio	*2000*	*2001*
SOLVENCY RATIO (base 8%)[11]	**12.0%**	**12.7%**
SOLVENCY RATIO (base 100%)	**150.4%**	**159.2%**

[11] *Eligible own funds/(total capital adequacy requirement * 12.5)*

The graph below shows the development of the solvency ratio (minimum 8%) since 1990. The weighted average is the ratio between total eligible own funds in the financial centre and total weighted risks. This weighted average takes into account all credit institutions according to their volume of business. The arithmetical mean is the average of the individual ratios of all credit institutions regardless of their volume of business.

Developments of the solvency ratio (base 8%) since 1990



1.9.3. Developments of solvency ratio distribution (base 8%)

In non-aggregate terms, improvement in the solvency ratio in the financial centre is essentially expressed in a reduction in the number of banks, the ratio of which is situated within the lower capitalisation bands, i.e. between 8% and 9%, and by an increase in the number of banks with a solvency ratio between 15% and 20%.

	Number of banks		*as % of total*
Ratio	*2000*	*2001*	*2001*
<8%	0	0	0.0%
8%-9%	10	2	1.6%
9%-10%	9	13	10.1%
10%-11%	16	12	9.3%
11%-12%	9	6	4.7%
12%-13%	10	11	8.5%
13%-14%	9	11	8.5%
14%-15%	8	5	3.9%
15%-20%	22	25	19.4%
>20%	48	44	34.1%
Total	**141**	**129**	**100.0%**

1.10. International expansion of Luxembourg banks in 2001

The expansion of Luxembourg banks on an international level continued in 2001, thus reflecting a move towards internationalisation in the banking groups concerned. Besides the opening of 4 branches, 11 subsidiaries within the financial sector were either formed or acquired during 2001. This diversification has an impact on the Commission in so far as the scope of consolidated supervision must be extended to these subsidiaries.

Name of bank	*Entity formed or acquired*
The Bank of New York Luxembourg S.A.	Opening of a branch in Brussels
Svenska Handelsbanken S.A	Opening of a branch in Geneva
SEB Private Bank S.A.	Opening of a branch in London
Dexia Banque Internationale à Luxembourg S.A.	Acquisition of 85% of Kempen & Co. N.V. in the Netherlands
Dexia Banque Internationale à Luxembourg S.A.	Acquisition of Financière Opale in France
Dexia Banque Internationale à Luxembourg S.A.	Acquisition of Ely Fund Managers Ltd in the UK
Banque Générale du Luxembourg S.A.	Acquisition of Banque MeesPierson Gonet (Suisse) S.A.
Banque Générale du Luxembourg S.A.	Acquisition of MeesPierson (Channel Islands) Ltd. in Guernsey
Banque Générale du Luxembourg S.A.	Acquisition of MeesPierson Trust in Liechtenstein
Crédit Européen S.A.	Acquisition of ING Banque Bruxelles Lambert (Suisse) S.A.
Crédit Européen S.A.	Acquisition of ING Baring Private Bank (Suisse) S.A.
Banque Populaire du Luxembourg S.A.	Acquisition of a 25% participating interest in the capital of Banca Popolare di Roma in Italy
Crédit Agricole Indosuez Luxembourg	Opening of a branch in Dublin
Banque de Luxembourg S.A.	Acquisition of a 49.99% participating interest in the capital of Fund Market France
Sanpaolo Bank S.A.	Formation of SP Private Banking S.A. in Switzerland

Branches established in the EU as at 31 December 2001

Country	*Luxembourg branches established in the EU*	*Branches of EU banks established in Luxembourg*
Germany	1	29
Belgium	1	2
Spain	1	0
Finland	0	1
France	1	6
Ireland	3	0
Italy	1	7
Portugal	2	2
United Kingdom	3	5
Sweden	1	2
TOTAL	**14**	**54**

Freedom to provide services in the EU as at 31 December 2001

Pays	*Luxembourg banks providing services in the EU*	*EU banks providing services in Luxembourg*
Germany	41	26
Austria	24	5
Belgium	47	18
Denmark	24	6
Spain	36	4
Finland	21	2
France	47	55
Greece	22	0
Ireland	20	22
[Iceland][12]	4	0
Italy	40	1
[Liechtenstein][12]	1	0
Netherlands	38	25
[Norway][12]	8	3
Portugal	25	6
United Kingdom	34	39
Sweden	19	1
TOTAL notifications	**451**	**213**
TOTAL number of banks	**64**	**213**

[12] *Although Iceland, Liechtenstein and Norway, members of the European Economic Area, are not members of the EU, these countries have implemented and apply the European Directive on the taking up and pursuit of the business of credit institutions.*

1.11. Banks issuing mortgage bonds

The principal activity of banks issuing mortgage bonds consists of granting loans guaranteed by real estate rights and/or loans to public organisations and issuing on this basis debt securities guaranteed by the claims resulting from these loans. These debt securities are known as mortgage bonds and their bearers benefit from a preferential claim on the loans which form their cover assets. These cover assets may not be seized by the personal creditors of the issuer other than the bearers of the mortgage bond.

Two years after the issue of the first public sector mortgage bonds, the market for Luxembourg mortgage bonds has continued its positive development. Indeed, as at 31 December 2001, the balance sheet total of the three banks issuing mortgage bonds totalled EUR 19.1 billion and the total volume of public sector mortgage bonds issued by these three banks reached EUR 11.3 billion, compared with EUR 5.7 billion at the close of the financial year 2000.

Issues of mortgage bonds are guaranteed by ordinary cover assets and by substitute cover assets. As at 31 December 2001, cover assets totalled EUR 14 billion, meaning that the mortgage bonds in circulation benefit from total over-collateralisation of EUR 2.7 billion. The ordinary cover assets of municipal bonds for the three banks in question break down as follows:

- claims on or guarantees from public organisations: EUR 3.9 billion
- bonds issued by public organisations: EUR 6.8 billion
- municipal bonds of other issuers: EUR 2.7 billion
- derivatives transactions: EUR 496 million

Besides these ordinary cover assets, the banks used substitute cover assets (other loans to credit institutions) amounting to EUR 25 million as at 31 December 2001.

Due to the faultless quality of investments of specialised banks and the scale of over-collateralisation in relation to the mortgage bonds issued, public sector mortgage bonds continue to receive an AAA rating from the rating agency Standard & Poor's. Indeed, the banks issuing mortgage bonds limit their investments by only including assets with a minimum AA rating as cover assets.

Although the Law of 21 November 1997 allows banks issuing mortgage bonds to issue both public sector mortgage bonds and mortgage debentures, the Luxembourg banks continued to limit their principal activities during the financial year 2001 to the issue of public sector mortgage bonds guaranteed by sovereign borrowers.

The first mortgage debentures will probably be issued during the course of 2002. In this context, the CSSF has just issued a Circular 01/42, addressed to banks issuing mortgage debentures and aimed at laying down the basic principles to determine the estimated realisable value of real estate which, up to 60% of the value, may serve as a guarantee for the mortgage debentures issued by a bank. Besides these basic principles, each bank wishing to issue mortgage debentures is required to establish detailed rules relating to valuation of property and all such rules must be submitted to the CSSF for approval.

[13] *see Chapter I, point 2.5.*

2. Developments in the regulatory framework[14]

2.1. Circular CSSF 01/26 relating to the Law of 12 January 2001

This Circular gives notice of entry into force of the Law of 12 January 2001 transposing Directive 98/26/EC on settlement finality in payment and securities settlement systems in the amended Law of 5 April 1993 relating to the Financial Sector.

In accordance with the Law, the systems approved by the Treasury and Budget Minister, and in which no national central bank of the ESCB (European System of Central Banks) participates, are subject to the prudential supervision of the CSSF.

The Law requires in particular that Luxembourg operators of Luxembourg systems obtain approval as "other financial sector professionals" unless they are members of the ESCB or are already approved as credit institutions or financial sector professionals.

2.2. Circular CSSF 01/27 fixing the external audit guidelines in practice

This Circular contributes towards enhancing the prudential supervision of the CSSF and establishes the basis for a new relationship between external auditors and the CSSF. In fact, the Circular pursues a dual objective. On the one hand, it updates Circular IML 89/60 relating to the practical rules governing auditing of the annual financial statements of credit institutions by external auditors, which it revokes, and on the other hand, it takes account of the broadening of the statutory function of external auditors following transposition of Directive 95/26/EC commonly known as the "post-BCCI Directive", which requires external auditors to notify the control authority of any situations necessitating specific intervention or monitoring.

Regarding the first aspect, an audit report must be prepared with effect from the end of 2001 according to a harmonised standard form covering in detail all aspects of a bank's operations. This form is to be used and submitted by all banks, not only on paper, but also in electronic form, which enables the CSSF to process information more efficiently.

The accounts must be audited according to the working recommendations of the *Institut des Réviseurs d'Entreprises*, which applies the International Standards on Auditing (ISAs) and, where appropriate, the new international standard ISAE (International Standard on Assurance Engagements), published by the IFAC (International Federation of Accountants).

With regard to the second aspect, namely the notification function, the external auditor must notify the CSSF of any relevant information in terms of prudential supervision and/or any information likely to require urgent action by the CSSF which comes to his attention during the audit. The auditor's task is henceforth not only one of short-term prevention as is the case for certification of financial statements, but also medium and long-term prevention, which is the objective of prudential inspection. The external auditor is thus explicitly called upon to contribute to prudential inspection. Circular CSSF 01/27 sets out the practical procedures involved in the notification function and gives specific examples of its application.

[14] *The Circulars in full are available on the CSSF website, at www.cssf.lu.*

2.3. Circular CSSF 01/30 relating to tables E 1.1, "Simplified statement of assets and liabilities" and E 2.1 "Simplified profit and loss account", and updating of table B 1.5 "Liquidity ratio"

CSSF circular 01/30 dated 28 June 2001 aims to supplement the reporting of bank branches originating from the European Community. In particular, it introduces a simplified balance sheet and profit and loss account which branches of EU origin may draw up in place of the full balance sheet and profit and loss account required of credit institutions under Luxembourg law and of branches of non-EU origin.

2.4. Circular CSSF 01/32 relating to the disclosure of information on financial instruments

Circular CSSF 01/32 relating to the disclosure of information on financial instruments dated 11 July 2001, transposes into Luxembourg legislation the principles of the European Commission's recommendation 2000/408/EC dated 23 June 2000.

Information on financial instruments as defined in the Circular must in principle be supplied either in the management report or in the notes to the financial statements as well as, where relevant, to the consolidated financial statements, which are to be drawn up by credit institutions governed by Luxembourg law.

The Circular requires publication of qualitative information relating to the methods and systems used for the management of the risks inherent to such instruments, as well as the related accounting methods. Quantitative information regarding the level of operations of such instruments, as well as the credit risk and the related market risks, must also be provided.

The provisions of the Circular must be applied for the first time in preparing annual financial statements - and consolidated statements where required - for the 2001 financial year. An internal study based on annual reports for 2000 has shown that the majority of institutions in Luxembourg will need to make considerable efforts in order to fall into line with the terms of the Circular.

Qualitative information

Objectives/strategies and description of risk management

- Description of main characteristics of risk management system
- Methods for evaluating and measuring risks
- Limits (details of existence, description)
- Description of nature of exposure to risks incurred
- Description of method of risk management
- Information on trading transactions
- Information on hedging transactions
- Information on complex or high-risk financial instruments
- Information on the use of guarantees and/or compensation agreements

Accounting methods applicable to financial instruments

Quantitative information

Analysis of financial instruments

Information on primary financial instruments (book value)

- Breakdown of instruments according to instrument type
- Breakdown of instruments according to maturity
- Breakdown of instruments into listed and unlisted instruments
- Breakdown of instruments into trading and non-trading instruments
- Breakdown according to economic sector
- Breakdown according to geographical region (countries/groups of countries)

Information on fair value for trading elements

(Where applicable, information on fair value for non-trading elements)

(Where applicable, information on mean values for non-trading elements)

Information on financial derivatives (notional value)

- Breakdown of instruments according to risk category (interest rate, etc.)
- Breakdown according to type of instrument (futures, options, etc.)
- Breakdown of instruments according to maturity
- Breakdown of instruments into listed and unlisted instruments
- Breakdown of instruments into trading and non-trading instruments

Information on fair value for trading elements

Information on mean fair value for trading elements

(Where applicable, information on fair value for non-trading elements)

(Where applicable, information on mean values for non-trading elements)

Information on credit risk (may be supplied within the framework of the analysis)

Information on credit risk for primary instruments

Information on credit risk for derivatives

- Breakdown according to degree of solvency
- Information on effects of compensation
- Information on replacement cost or other risk measures
- Information on net exposure

Information on significant concentrations of credit risks

- Breakdown according to economic sector
- Breakdown according to geographical region (countries/groups of countries)

Information on market risk

Information on VaR, or other measure enabling market risk to be identified

- Breakdown of this information according to risk category (foreign exchange, interest rate, price)
- Information on potential effects on future income of variations in rate/price
- Breakdown of fair values of trading instruments

2.5. Circular CSSF 01/42 relating to mortgage bank real estate valuation rules

This Circular is applicable to Luxembourg mortgage banks and aims to set out the basic principles in matters of determining the realizable value of real estate.

Each Luxembourg mortgage bank wishing to issue mortgage debentures is required to draw up property valuation rules. Based on Article 12-5(5) of the amended Law of 5 April 1993 relating to the financial sector, estimation of the value of a real estate must be undertaken in a true, fair and conservative manner and may only take into account the long-term characteristics of a real estate and the long-term income which it is likely to produce for any owner making normal use thereof.

The Circular provides that the estimated realizable value of an asset is set on the basis of two different calculation methods *("Zwei-Säulen-Methode")*, thus favouring objectivity and transparency. The value of an asset is determined on the one hand by calculating the intrinsic value *("Sachwert")*, taking into account the lasting characteristics of the asset and, on the other hand, by calculating the net income value *("Ertragswert")*, taking into account the lasting income from the asset.

The Circular also stipulates that mortgage banks are required to appoint at least one independent and experienced real estate expert who shall propose an estimated realizable value for the asset, applying the detailed valuation rules set by the bank.

3. Significant events during the year

3.1. Planned reform to capital adequacy

In 2001, the work of the Basel Committee focused on the finalisation of the new provision for capital adequacy, commenced in June 1999.[15].

The New Accord lays down approaches which are both more exhaustive and more precise in terms of risk sensitivity than the Accord of 1988, while preserving the global level of regulatory capital. The New Accord rests on three pillars: minimum capital requirements, Supervisory Review Process and market discipline.

With regard to credit risk, a differentiation based on debtor quality has been incorporated. Two principal options are available:

- Standardised approach (based on external ratings of debtors by recognised rating agencies), intended for less sophisticated banks;

- Internal ratings based approach (IRB) for more advanced banks. The latter comprises two variants, "foundation" and "advanced".

The new provision introduces more precise risk-sensitive treatment in terms of techniques of credit risk mitigating, both in the standardised approach and in the IRB approach.

In addition, the Committee has established a capital requirement for operational risk. Three approaches have been determined (in order of increasing complexity): the basic indicator approach, the standardised approach, and the internal measurement approach. The first approach uses only one indicator of operational risk for all the activities of an institution. The second allocates indicators to different business lines. In the third approach, the internal loss data are used to estimate the required capital.

These approaches, both for credit risk and operational risk, enable a reduction in capital requirements where the applied method is more sophisticated. The New Accord thus creates a structure based on graduated incentives enabling a reduction in capital requirements.

[15] *The second consultative document and its supporting documents, published in January 2001, have already been presented in the CSSF annual report for 2000. Since then, the following documents relating to the New Accord have been published by the Basel Committee:*
- *Working paper on IRB treatment of expected losses and future margin income (July 2001)*
- *Working paper on risk sensitive approaches for equity exposures in the banking book for IRB banks (August 2001)*
- *Working paper on the regulatory treatment of operational risk (September 2001)*
- *Working paper on pillar 3 – market discipline (September 2001)*
- *Working paper on the IRB approach to specialised lending exposures (October 2001)*
- *Working paper on the treatment of asset securitisations (October 2001)*
- *Results of the second quantitative impact study (November 2001)*
- *Potential modifications to the Committee's proposals (November 2001)*

These documents may be consulted on the Bank for International Settlements website at: www.bis.org.

3.1.1. New developments

Not all aspects of the new regulatory framework are featured in detail in the second consultative document dated January 2001. As the working groups of the Committee advanced their work, between August and December 2001, the Committee published working documents presenting the new developments. These publications result from the wish of the Committee to maintain an ongoing dialogue with the industry. For instance, the treatment of securitisation in the IRB approach, which was not included in the consultation document, was the subject of a working document published in October 2001.

Following about 250 comments received by the end of the consultation period, as well as the results of the quantitative impact study undertaken in 2001, the Committee decided to take into account the industry's criticisms on several points. This has led in particular to a reduction in capital requirements compared with that obtained if the initial proposals had been retained, and which would have been significantly higher than those calculated under the current Accord. As a first measure, the Committee decided to flatten the weight function for the "corporate" portfolio in order to take into account the specific features of small and medium-sized businesses. In addition, the "w" factor, intended to take account of residual risks when credit risk mitigating techniques are applied, has been removed from the first pillar of the New Accord; it will be replaced by requirements in the second pillar. Furthermore, the calibration of the requirement for operational risk has been amended from 20% to 12% of the total requirement.

Among the new significant developments, the following in particular may be noted:

- For repo-style transactions, portfolio approaches are envisaged.

- Specific treatment for retail commitments has been introduced in the IRB approach; in the standardised approach, preferential weighting for such commitments could be incorporated. Inclusion of small and medium-sized businesses in this category is being discussed.

- Detailed proposals for treatment of securitisation in the IRB approach as well as synthetic securitisation have been devised. Work on this subject is still ongoing.

- In the IRB approach, detailed proposals have been devised for the areas of equity (in the banking book) and specialised lending (including project finance).

- For treatment of the operational risk, a variety of advanced measurement approaches will be recognised. Banks operating using an advanced approach will be able to partially take into account insurance policies as methods for operational risk mitigating.

The Committee had planned to publish a third consultative document beginning 2002, the finalisation of the New Accord being scheduled for mid 2002. However, the agenda has changed in so far as the Committee will publish an outline of these new proposals, including in the areas in which these are not yet definitive. A new impact study will be based on this outline, and the results of this study will be incorporated in the third consultative document.

3.1.2. Impact on Luxembourg banks

The New Accord will be transposed into European Union law by a new Capital Adequacy Directive which will take effect at the same time and apply to all credit institutions and investment firms in the European Union. The new directive will adhere very closely to the New Accord, while taking into account certain European specificities in order to avoid creating any competitive inequalities between Member States, as well as to avoid disadvantaging small and medium-sized businesses.

In some European countries, small banks have already begun to set up joint databases enabling them to meet the qualifying criteria for the IRB approach. The standardised approach with regard to credit risk is not considered very attractive; not only is it more conservative but, due to the fact that use of external ratings is not very widespread in Europe, it would allocate a weighting of 100% to almost all corporate debtors.

The CSSF is not yet in a position to evaluate the impact of the new rules in terms of capital adequacy, since the information provided by Luxembourg banks is insufficient. It is all the more important for the purpose of evaluating the impact on the financial centre, that credit institutions participate in the next quantitative evaluation QIS 3, which will take place in 2002. Information technology systems and risk management systems will certainly be very much engaged, in particular if implementation of advanced methods is planned. On the other hand, it should be noted that adoption of the most simple approaches (standardised approach for credit risk and basic indicator approach for operational risk) will entail an increase in requirements compared with current levels; added to this is the duty to disclose information on the approaches chosen. It is worth noting that institutions wishing to operate under the IRB approach from 2005 onwards, the date planned for implementation of the New Accord, are already required to begin setting up the necessary databases. The credibility of Luxembourg as a financial centre will be judged not least by its degree of readiness and participation in the more advanced approaches provided for under the New Accord.

In September 2001, the CSSF had sent to all credit institutions under Luxembourg law a circular letter containing a questionnaire on the main options planned within the framework of the first pillar of the New Accord on the basis of the consultative document dated January 2001. The detailed results of this survey were published in the January 2002 edition of the CSSF Newsletter. It should be pointed out that most of the banks questioned will follow the approach adopted by their parent establishment. The survey has revealed that a significant number of Luxembourg banks plan to use the more sophisticated and risk sensitive approaches from the outset, or to move on to using more advanced approaches at a later stage. Thus, 27% of banks plan to use the IRB approach, of which one third will apply the advanced approach.

3.2. The Clearstream case

In February 2001, the press (mainly in France) published a series of articles accusing Clearstream of laundering criminal funds. These articles were based on the content of a book called *"Révélation$"*, published a few days later, and containing a whole range of allegations against Clearstream, including in particular the charge of keeping unpublished accounts, the use of Clearstream to carry out money laundering operations, and the existence of double accounting. The allegations were formulated in a vague manner and were not based on any tangible or reliable evidence.

The Public Prosecutor at the Luxembourg District Court instituted a preliminary investigation on 26 February 2001 in order to verify whether Clearstream had committed any violations of Luxembourg criminal law or the anti-money laundering provisions. The CSSF has followed the development of the Clearstream case closely and actively and assessed it from a prudential perspective.

In response to a question from a Luxembourg weekly newspaper, the Director General of the CSSF declared on 1 March 2001 that the supervisory authority had not noted any anomalies pointing to the existence of money laundering operations via parallel financial channels.

On 7 March 2001, the CSSF asked Clearstream to appoint an external auditor to examine the allegations made in the book *"Révélation$"*. For its part, Clearstream had already asked its legal advisors, Freshfields Bruckhaus Deringer, to appoint KPMG Forensic & Investigative Services to conduct audit work covering all the allegations. The CSSF accepted this choice. Clearstream also instituted legal action, in particular against the authors and publisher of the book.

The audit and verification work led to preparation by KPMG and Freshfields of an interim report dated 25 March 2001 and a status report dated 5 June 2001. Following these two reports, Clearstream decided to engage Deloitte & Touche and Andersen to undertake additional verification work. This work led to two new reports, the first prepared by Deloitte & Touche dated 4 September 2001, and the second prepared by Andersen dated 16 November 2001.

The four reports did not show any evidence supporting the allegations contained in the book *"Révélation$"*. According to a statement released by the Public Prosecutor's Office on 9 July 2001, the research undertaken following the institution of the judicial investigation revealed neither the scenario of systematic manipulation described by one witness cited in the book, nor failure to present a full set of accounts. The statement also indicated that the investigation would continue on isolated, non systemic facts, which however, were not relevant in terms of prudential supervision.

4. Prudential supervisory practice

4.1. Objectives of supervisory practice

Supervision of banks aims at the following:

- Ensuring the security of the public's savings by monitoring the solvency and prudent management of individual banks;
- Ensuring financial stability and proper functioning of the banking system as a whole;
- Protecting the reputation of the financial sector by censuring ethically unacceptable conduct.

In order to fulfil these objectives of public interest, the Commission monitors application by credit institutions of the laws and regulations relating to the financial sector.

4.2. Monitoring of quantitative standards

Quantitative standards, designed to ensure financial stability and risk spreading by credit institutions, relate to:

- Evidence of minimum equity capital;
- A maximum ratio between own funds on the one hand and risk exposure on the other;
- Limiting the concentration of risks on a single debtor or a group of associated debtors;
- Liquidity ratio; and

- Limiting qualified participating interests.

In 2001, the CSSF did not have to intervene in any instances for violation of capital ratio. It intervened on six occasions with regard to non-compliance of liquidity ratios, and on fourteen occasions with regard to overstepping limits on large risks. These breaches often resulted from difficulties in interpreting regulations, and all were rapidly regularised.

4.3. Monitoring of qualitative standards

In order to evaluate the quality of a bank's organisation, the Commission relies to a large extent on the analytical reports prepared by external auditors. The content of the reports for the 2000 financial year, analysed by the CSSF during 2001, was defined by Circular IML 89/60. With effect from the financial year 2001, these reports will be prepared according to the new format as defined in Circular CSSF 01/27. During the year under review, 127 analytical reports on Luxembourg credit institutions were analysed.

Within the framework of supervision on a consolidated basis, the CSSF requires the preparation of analytical reports for subsidiaries of credit institutions, whether these are banks or other enterprises in the financial sector, either in Luxembourg or abroad. 74 analytical reports of subsidiaries were analysed during the year under review.

Management letters prepared by external auditors for the attention of the banks' management constitute an important source of information on the quality of the organisation of credit institutions. In these reports, the external auditors point out weaknesses they have found in the internal control system during their assignment and which they deem fit to notify the banks. During 2001, the CSSF analysed 91 management letters.

The CSSF also takes into account internal audit work when evaluating the quality of the organisation and risk management by analysing the summary report which the internal auditor must prepare each year. The CSSF thus analysed 127 summary reports. In 2001, the CSSF also requested 72 specific internal audit reports in order to obtain more detailed information on particular subjects.

All these reports are processed according to a methodology described in the CSSF's internal procedures. The reaction of the CSSF depends on the seriousness of the problem raised and whether it is repetitive in nature. This reaction varies from simple monitoring of the problem on the basis of reports, through preparation of deficiency letters (lettres d'observation), to convening of the bank's management or on-site inspection undertaken by agents of the CSSF. Where necessary, the CSSF may use its formal powers of injunction and suspension.

During 2001, the CSSF sent 101 deficiency letters to banks based on shortcomings in terms of organisation.

4.4. Combating money laundering

The Commission pays special attention to the compliance by credit institutions with their professional duties in matters of money laundering offences. The annual report compiled by the external auditors must cover compliance with the legal obligations and enforcement of internal procedures to prevent money laundering. In 2001, the Commission took action against 44 banks due to shortcomings detected by the external auditor. Most of the interventions related to incomplete documentation on the opening of accounts. In these instances, the Commission asked the credit institutions to block the accounts concerned until receipt of all the required documentation. A few cases of inadequately trained staff were also observed, as well as instances where there was no system to detect irregular operations.

The law requires that banks with branches or subsidiaries abroad ensure that these comply with their professional duties under Luxembourg law, in addition to the standards of the host country. The internal audit of the Luxembourg bank must periodically verify compliance with these requirements. The CSSF took action on two occasions due to the non-compliance with Luxembourg rules by subsidiaries abroad.

Within the framework of establishing the on-site inspection programme for the year 2002, the CSSF decided to focus on money laundering issues. During inspections, particular attention will be paid to implementation of Circular CSSF 01/40 specifiying the extent of professional duties in matters of combating money laundering.

According to current rules, the banks are under a duty to declare suspect operations both to the Public Prosecutor's Office and to the CSSF in order for the latter to perform its function of prudential supervision. The majority of statements received by the CSSF in 2001 related to measures taken against the Taliban in Afghanistan following the attacks of 11 September. However, a considerable number of declarations were made on the basis of the prudential principle (homonyms of persons, entities and organisations entered on lists distributed by the European Commission, the US authorities and the Public Prosecutor's Office, divergent spelling of names liable to lead to confusion, etc.). In a series of cases, the CSSF asked for additional explanations from the banks in order to verify if the internal procedures in place, particularly when entering in relation with new customers, were adequate, or if they were being rigorously observed.

The complete regulatory arsenal relating to money laundering is set out at point 6 of Chapter IX, "Banking and financial legislation and regulations ".

4.5. On-site inspections

In 2001, the CSSF continued its efforts in terms of on-site inspections. 35 inspections were undertaken, as compared with 37 in 2000. These related principally to internet banking, prevention of money laundering, lending activities and the "group leader" function, and were undertaken within the framework of a programme set up at the start of the year based on evaluation of the risk areas of the various credit institutions.

During 2001, the CSSF also set up standard inspection procedures for the various functions to be controlled, which should simplify the work of its agents.

4.6. Interviews

The CSSF regularly conducts interviews with bank executives to discuss the business market and any problems. It also requires prompt notification by the banks if a serious problem arises.

In 2001, 175 interviews were conducted between CSSF representatives and bank executives.

4.7. Sanctions

As in previous years, the Commission did not have to formally use its right of injunction and suspension held under the law on the financial sector. However, following certain events which occurred at three banks, four executives were led to resign.

Moreover, the Commission filed five complaints with the Public Prosecutor's Office for illegal banking activities.

4.8. Specific controls

Article 54 (2) gives the Commission the right to ask an external auditor to conduct a specific audit in a given institution. The CSSF invited some banks to appoint an external auditor themselves to audit a specific area. Four controls of this type took place at banks during 2001.

4.9. Internal audit reports

In accordance with Circular IML 98/143 on internal control, banks must submit two reports to the CSSF each year: one summary report on the internal audit, and one management report on the internal control status.

- The summary report of the internal audit takes into account all audits conducted during the year. It must present the main inadequacies detected, the corrective action decided and the effective follow-up of such action. This report must enable the CSSF to detect weaknesses in the internal control system. It must also raise occasional problems which the internal auditor has examined during the year, such as fraud, irregularities, etc.

- The management report on the status of internal controls constitutes a summary self-assessment of the quality of the entity's organisation compared with the standards in force.

4.10. Supervision on a consolidated basis

As at 31 December 2001, 29 banks under Luxembourg law[16] (compared with 30 at the end of 2000), as well as one Luxembourg-incorporated finance company[17] (idem 31.12.2000) were supervised by the Commission on a consolidated basis. In total, 43 foreign credit institutions and 53 foreign investment firms are included in this consolidated supervision of Luxembourg credit institutions.

Breakdown by country of incorporation of subsidiaries included within supervision on a consolidated basis

Country of incorporation	*Number of subsidiaries*
Switzerland	21
France	20
Channel Islands	9
United Kingdom	9
Spain	7
Netherlands	6
Ireland	4
Germany	3
Monaco	3
Belgium	2
Hong Kong	2
Italy	2
Singapore	2
Austria	1
Australia	1
Bahamas	1
Cayman Islands	1
Denmark	1
Japan	1
TOTAL	**96**

The high number of subsidiaries established in Switzerland is due in particular to the special role of Switzerland and Luxembourg as private banking centres. With the aim of creating synergies, several banking groups decided to attach their Swiss presence to their Luxembourg subsidiary, making the latter a centre of private banking for the entire group.

The conditions governing submission to a consolidated supervision, the scope, content and methods of supervision on a consolidated basis are laid down in Section II, Chapter 3 of the amended Law of 5 April 1993 on the financial sector. The procedures in question implement Directive 92/30/EEC on the supervision of credit institutions on a consolidated basis. The practical application of the rules on supervision on a consolidated basis are explained in Circular IML 96/125.

[16] *Banca Popolare Commercio e Industria International S.A.; Banca Popolare di Verona International S.A.; Banque Continentale du Luxembourg; Banque de Luxembourg S.A.; Banque Degroof Luxembourg S.A.; Banque Générale du Luxembourg S.A.; Banque Populaire du Luxembourg S.A.; Banque Raiffeisen; Banque Safra-Luxembourg S.A.; BHF-BANK International S.A.; BNP Paribas Luxembourg; Commerzbank International S.A.; Credem International (Lux); Crédit Agricole Indosuez Luxembourg; Crédit Européen S.A.; Danske Bank International S.A.; Deutsche Bank Luxembourg S.A.; DekaBank Deutsche Girozentrale Luxembourg S.A.; Dexia Banque Internationale à Luxembourg S.A.; DZ Bank Luxembourg S.A.; Dresdner Bank Luxembourg S.A.; Europäische Hypothekenbank S.A.; Fideuram Bank (Luxembourg) S.A.; John Deere Bank S.A.; Kredietbank S.A. Luxembourgeoise; Landesbank Schleswig-Holstein International S.A.; Sanpaolo Bank S.A.; Société Générale Bank & Trust; West LB International S.A.*

[17] *Clearstream International*

Consolidated supervision is performed using specific reporting, as well as on the basis of reports to be prepared by the external auditors and covering the group and the various operating subsidiaries. Until now, the CSSF has not yet itself undertaken on-site inspections at foreign subsidiaries of Luxembourg banks. However, it does intend to do so in the near future.

The Commission also investigates indirect participations of banks subject to its consolidated supervision in accordance with the terms of Circular IML 96/125.

4.11. Specific problems: fraud and malfunctioning

As in previous years, some banks were exposed to fraudulent activities of employees or malfunctioning of the organisation which led to financial losses. The present section describes typical cases in order to enable the banks to draw organisational lessons. These cases illustrate how compliance with certain essential organisational rules enables prevention of such events, or at least makes them less likely to happen.

1. Fraudulent activities in relation to **cash transactions** and **processing of mail domiciled** at the bank.

   - In certain instances, bank employees withdrew cash from customer accounts by placing false signatures. These situations arose because the account managers were able to make cash withdrawals on behalf of the customer but without the customer being physically present.

   - Fraudulent operations took place on accounts of some customers whose mail was generally held at the bank ("hold mail"). Using such manipulations, the customer's account manager was able to conceal losses on the accounts of customers within the framework of asset management undertaken for such customers. Specifically, the mail containing the account extracts and produced by an ad hoc service of the bank could be intercepted by the customer's account manager, who swapped the correct extracts for falsified extracts which showed an incorrect (more favourable) statement of the assets lodged with the bank.

   In both cases, fraud was possible due to non-compliance of the principle of separation of tasks. On the basis of this principle, tasks and responsibilities must be assigned so as to ensure that a single person does not assume incompatible duties, whatever its hierarchical position in the bank. Banks are reminded that, on the basis of the provisions of Circular IML 96/126, each bank is under a duty to apply this principle and, using a reciprocal control environment, to guard against a person being able to commit errors and irregularities which might not be uncovered.

   Similarly, Circular IML 98/143 regarding internal control insists on the duty of setting up internal control mechanisms within institutions, such controls being intended to guard against execution errors and fraud and to enable their rapid detection. Alongside daily controls and ongoing regular critical controls, each bank must ensure that risk operations, including cash transactions and handling of domiciled mail, are subject to regular controls undertaken by the bank's internal auditor.

   In the two scenarios set out above, application of these principles means that the banks must:

   - Be organised in such manner that cash transactions are effected directly and exclusively between the cashier and the customer (whose physical presence is required), without the involvement of the account manager;

- Implement a system ensuring that a person other than the customer's account manager hands held mail to the customer when he attends at the bank. In addition, the preparation, issuing, printing and holding of mail must clearly be undertaken in a department which is independent of the customer's account management department.

Finally, the CSSF takes the view that the banks must take legal action in cases of fraud perpetrated by bank employees. Despite the publicity generated by legal action, it would be improper for such acts not to have consequences for their perpetrators.

2. Following the detection of fraudulent operations, the CSSF requires that the "four eyes control" principle be applied systematically with regard to all **account opening and closure transactions**, as well as with regard to all **account entries made**. This means that banking procedures must provide that all account records made by a person must compulsorily be validated by a second employee of the bank.

   In addition, banks must attach particular importance to handling of internal accounts by their employees. Indeed, regular failure to verify movements on internal accounts has favoured the commitment and hence the concealment of fraud perpetrated by bank employees.

   It should be stressed that, on the basis of Circulars IML 96/126 and IML 98/143 referred to above, the opening, use and closure of such accounts must be governed by precise procedures which include provision for monitoring account movements and regular evidence of balances, whereby it is the duty of the internal auditor of the bank to verify on a regular basis that such procedures exist and are being observed.

3. Following malfunctions detected at several banks, the CSSF requires that private banking operations may not be effected by simple banking agencies set up for retail banking. Among the typical characteristics of private banking, particular mention should be made of contact with wealthy customers processing complex and often riskier operations, discretionary management presupposing advanced knowledge of the financial markets, and held mail carrying a particular responsibility. Such business relations must be handled in specialised centres equipped and organised in such a manner as to create a maximum of quality and control.

4. In the context of **Lombard loans** (margin lending), one customer effected significant forward transactions leading to considerable losses which he was not in a position to sustain financially. The losses suffered through these operations ultimately had to be borne by the bank, since the guarantee held by the bank in the form of financial assets of the customer had become insufficient and that the customer was not able to provide any additional guarantees. The bank's control systems failed to detect this risk due to both technical and human failings. Forward operations were not included in the lists of customer commitments which are regularly compared with customer assets. On the other hand, the people who should have reviewed forward operations did not notify this customer's alarming situation to the general management.

   This case illustrates the importance of a sound system for monitoring customer commitments in relation to available guarantees. Such a system must not only include advances but also all other commitments: guarantees, forward operations, etc. It must be particularly effective when the bank authorises its customers to effect leverage credit operations.

5. Another customer lodged bearer securities with a bank, then requested and obtained a loan secured by the same securities. It subsequently emerged that these were forgeries and that the bank had fallen victim to a confidence trick. The bank should not have accepted securities as a guarantee without authenticating them and the holder's right of disposal had been clearly established.

6. A bank opened an account for a foreign management company of an investment fund. The money which the company placed in this account served as guarantee for a loan granted to another company of the depositor's group. It subsequently emerged that part of the money which the management company had placed in fact belonged to the investment fund, i.e. to the investors, and should not have been pledged as guarantee.

   The banks must treat accounts opened by professionals with caution if they are likely to receive funds not belonging to them. The funds placed in such accounts may only serve as a guarantee if the bank is certain that they do not belong to third parties.

   The above problem was exacerbated by the fact that those in charge at the bank did not pay the necessary attention to a key document, received when the account was opened, for the simple reason that this document was written in a language not used in Luxembourg. The only person at the bank who understood this language did not realise the significance of the information contained in the document in question.

7. Some institutions occasionally transported funds in cash (between Luxembourg and abroad) or collected cash from some of their private customers. The CSSF strongly recommends that banks refrain from such practices, not only in light of the physical risks involved, but also of the risk of fraud to which the banks expose themselves and the risk of contravening foreign law.

4.12. Canvassing of customers

For several years now, the Commission has been concerned by cases of customer canvassing practised by employees to the detriment of their former employer.

The rules to be observed in such instances of specific competitive situations were set out by the CSSF in Circular 2000/15 relating to the rules of conduct in the financial sector:

- The professional must refrain from removing or attempting to remove customers from a competitor by using dishonest or unfair methods. The professional is, in particular, not permitted to try to receive and use confidential data on the customers of a competitor available to a member of his staff previously employed by that competitor. He must also ensure that his employees do not actively use such data for the same purpose.

- The professional must refrain from all practices of this kind, particularly when an account manager changes employer, since both the professional and the employee in question may on this basis, and according to the circumstances, each be held liable under both criminal and civil law.

- The professional reputation of persons concerned under the terms of Articles 7 and 9 of the Law of 5 April 1993 on the financial sector may be challenged by the Commission if such practices are detected.

The starting point for the CSSF's approach is that the goodwill of a bank belongs to the latter and not to the employees, whatever the professional and sometimes private relationship which may exist between the employees and their customers.

The experience gathered in processing the various complaints referred to the CSSF shows that certain rules must be observed both when a bank hires a new employee and when a bank takes its leave of a manager.

If a bank is recruiting a new manager who previously worked for a competitor, it is essential for the bank to ensure that it draws the manager's attention to the regulatory provisions in matters of canvassing, preferably in writing. The bank must make it clear that all contact with customers of the former employer is prohibited. Consequently, it must monitor new customer account requests and do everything within its power to verify that these are not the result of canvassing undertaken by the newly recruited manager. Obviously, the terms of remuneration must not be designed so as to encourage such canvassing.

If a manager is about to leave a bank, the bank must immediately take measures to take care of the customers affected. In order not to leave such customers without a contact at the bank, a new manager must be named and introduce himself as such.

The former manager must not inform customers of his departure on his own initiative, either before or after leaving the bank. It must be presumed that when a manager who has left a bank contacts a customer of his former employer, he is not doing so as a private individual but as an employee of his former bank. To the extent that the business relationship only exists as such between the bank and the customer, the manager may not agree on a personal basis with a customer to contact him once he is in his new job.

Clearly, a manager who leaves a bank is not allowed to take with him any information files (address lists, telephone lists) relating to the customers of his former employer. This ban applies to all media: listing paper, diskettes, information recorded in a notebook, numbers recorded in a mobile phone, etc.

With regard in particular to use of a mobile phone for contact between a manager and customers, the CSSF strongly recommends to banks that account managers are prohibited from using their personal mobile phones. In fact, it is preferable that each manager should use only the mobile phone provided to him by his employer for the purpose of contacting customers. Thus, when the manager leaves the bank, he is obliged to return the mobile phone to his former employer.

CSSF's experience shows, moreover, that in some cases, if an account manager changes employer it is often subsequent to unprofessional or even fraudulent conduct. It is therefore vital for the new employer to obtain detailed information on the career history of the manager at the time of recruitment, particularly requesting, if possible, a reference from the former employer. It is also important that the former employer takes the required legal measures in relation to managers having engaged in fraudulent conduct.

4.13. International co-operation in matters of banking supervision

The CSSF has concluded memoranda of understanding with the banking supervisory authorities of most Member States of the European Economic Area[18] with a view to specify terms of cooperation. These memoranda concern in particular the control of credit institutions involved in cross-border operations by way of the freedom to provide services or through the creation of branches.

In addition, in accordance with the legal provisions in force, the CSSF co-operates and exchanges information on an informal basis with a number of its counterpart authorities.

In 2001, the CSSF held eight bilateral meetings with various banking supervisory authorities in order to exchange prudential information on institutions under supervision having a presence in both countries.

[18] *Namely Germany, Belgium, Spain, Finland, France, Ireland, Italy, Norway, the Netherlands, Portugal, the United Kingdom and Sweden.*

Alongside the consultations required under European Directives, the CSSF informs the relevant authorities of all significant facts relating to supervision. In particular, it consults the relevant authorities regarding the acquisition of significant participating interests and restructuring of share ownership. In 2001, the CSSF sent 460 letters to foreign authorities in the context of international co-operation.

In 2000, the CSSF signed a memorandum of understanding with the Belgian and French authorities relating to supervision of the DEXIA Group. In 2001, a similar agreement, this time relating to supervision of the banking activities of the Fortis Group, was signed between the CSSF and the Belgian and Dutch authorities.

The authorities considered that the new structures of these groups, in introducing a decentralised organisation of operational management units and centres of competence, made an adaptation of the prudential supervision to the activities of these groups necessary. The key objective of such cooperation between authorities is to ensure that all banking activities of these groups are adequately supervised. To this end, the authorities are particularly keen to ensure that the various sets of regulations are applied in a harmonised manner in order to avoid any unbalanced treatment within the groups.

The cooperation between authorities is enacted on several levels:

- close consultation between the authorities to co-ordinate and align their prudential supervision;

- continuous and systematic exchange of information on any significant event likely to impact the group or its main constituent entities;

- regular consultation for the principal purpose of updating the list of points requiring the attention of the authorities within these groups, drafting of control plans and, finally, examining the appropriateness of inspections to be made on-site by the competent authority in close cooperation with the other relevant authorities.

The CSSF takes the view that this new form of co-operation substantially improves the effectiveness of supervision of cross-border banking groups and it is convinced that these can be supervised thoroughly by national authorities collaborating via memoranda of understanding so as to cover all dimensions of a group's activities. This underlines the belief of the CSSF that there is no need for centralised supervision of cross-border groups at EU level.

5. Evaluation of financial stability

Stress tests in the economic and financial environment, beyond analysis of risk positions per se, also provide valuable insight into the risk management of Luxembourg credit institutions. In 2001, the CSSF used this method in order to evaluate the effects of two major stress events on the financial stability of the financial center. It intends to continue to expand and converge such risk measures.

5.1. Stress tests applied to exposure to high-risk sectors/high-risk countries

Monitoring of certain sectors which are more specifically affected by an unfavourable economic climate as well as by the direct and indirect consequences of the tragic events of 11 September 2001 is undertaken on the basis of the new quarterly reporting of exposure across high-risk sectors as determined by the circular letter dated 29 November 2001. The sectors covered are telecommunications, media and technology, transport, aviation, tourism and leisure, as well as insurance. Twenty "systemic" credit institutions, selected on the basis of their balance sheet totals, and comprising the majority of risk positions of the financial market, were asked to provide quarterly reporting. The sample survey covers 60% of the balance sheet total and 74% of equity capital of the Luxembourg financial center at the end of 2001.

Monitoring exposures to high-risk countries is undertaken on the basis of the banks' annual reporting of breakdown of value adjustments.

The CSSF applies the same methodology to evaluation of exposure to high-risk sectors and exposure to high-risk countries. The analysis is undertaken from two perspectives.

In a purely quantitative view, the gross amounts, as well as the use of credit risk mitigation techniques, are the subjects of an analysis which provides an overall view of the exposure of Luxembourg credit institutions.

From a more qualitative angle, the development of stress scenarios applied to the banks' most significant risk exposures detects any risk concentration. These simulations, jointly with other instruments of prudential supervision, enable the CSSF to efficiently identify the potential weaknesses in risk positions of credit institutions.

5.1.1. Methodological aspects

The working hypotheses applied both to risk positions and counterparty default probabilities, as well as losses in the event of default, are deliberately conservative. The same is true with regard to the hypothesis of perfect correlation between individual defaults. The aggregate data is thus analysed according to the following formula:

$$\text{Estimated credit loss} = \sum_i NRP_i * PD_i * RL_i$$

where:

NRP	=	Net risk position
PD	=	Probability of default
RL	=	Rate of loss

Risk positions are considered net of collateral and guarantees. The latter must satisfy strict conditions of eligibility covering aspects both of quality and liquidity. In certain instances, haircuts are applied to the residual non-collateralised risk. Specific provisions may for their part be deductible from the risk position.

The **probability of default** is modelled on historical default probabilities linked to ratings awarded by recognised rating agencies. An upward adjustment of the probability of default constitutes the actual stress effect of the simulation.

The r**ate of non-recovery** is considered to lie at 50%. This rate of non-recovery is in line with the working hypotheses of the Basel Committee. The resulting recovery rate is lower than the historical average, according to publications by rating agencies.

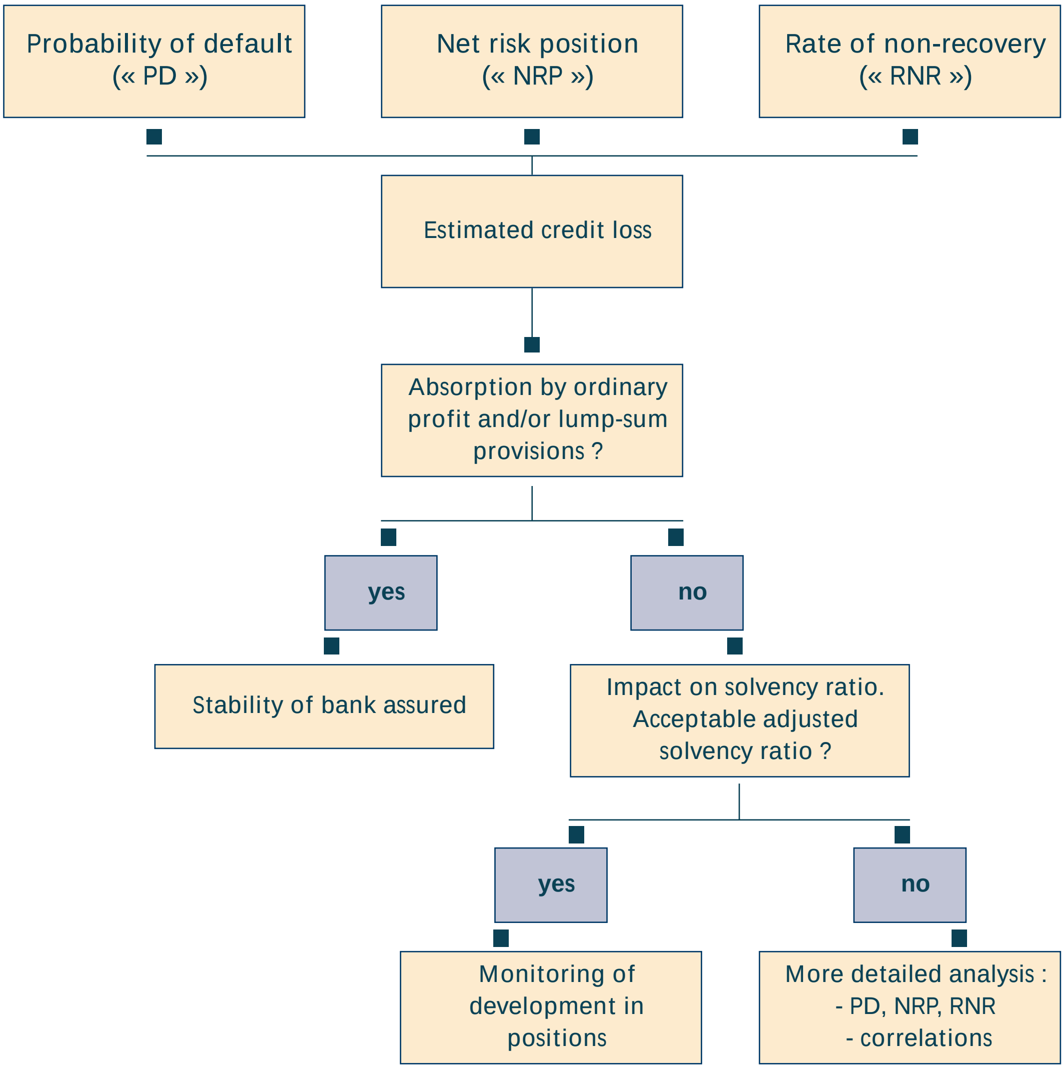
The anticipated credit loss thus calculated is then set against the capital buffer of each credit institution. On a hypothetical basis, the current result and general provisions previously constituted are the first to be absorbed. Beyond this, regulatory capital is impacted, leading to a lowering of the solvency ratio of the credit institution following the simulation. Easing of the more conservative hypotheses then enables a more sophisticated analysis of the impact in capital terms in order to confirm the presence or absence of any potential weaknesses in a credit institution.

5.1.2. Results of simulations

Globally, the results of the simulations on the basis of the data supplied by the twenty systemic credit institutions of the Luxembourg financial center lead to the conclusion that these institutions do not reveal any significant weaknesses with regard to exposure to so-called "high-risk" sectors.

Even assuming the impact of a stressful event across all high-risk sectors or across all high-risk countries, none of the twenty credit institutions would have to bear the loss of all their equity.

In all cases, the impact on solvency ratio may be considered as minor. Indeed, provisions alone absorb a large part of the impact. Thus, assuming the impact of a simultaneous stressful event across high-risk sectors, only four of the twenty credit institutions record a solvency ratio below 8%. The relative significance of commitments in the telecommunications sector is the main reason. Assuming a stressful event across high-risk countries, all the banks analysed maintain a solvency ratio above 8%. Finally, it should be noted that a crisis scenario in an isolated sector, country or region clearly produces lesser effects.



5.2. Systemic risk following from interbank exposures of Luxembourg credit institutions

5.2.1. Presumption of systemic risk

The aggregate balance sheet of Luxembourg credit institutions reveals a significant concentration in terms of interbank assets and liabilities. Some 50% of balance sheet activity concerns transactions between bank counterparties. The extent of such sectoral exposures gives rise to a presumption of systemic risk. Indeed, based on the sums committed and its intertwined structure, the interbank market comprises a potential risk of contagion, where the default of one counterparty in the interbank market risks causing a whole series of defaults.

The objective of this study is to quantify the potential of contagion in the Luxembourg interbank market.

5.2.2. Modelling and sampling

Interbank risks are assessed by means of a simulation exercise, the main lines of which are set out in the diagram below.

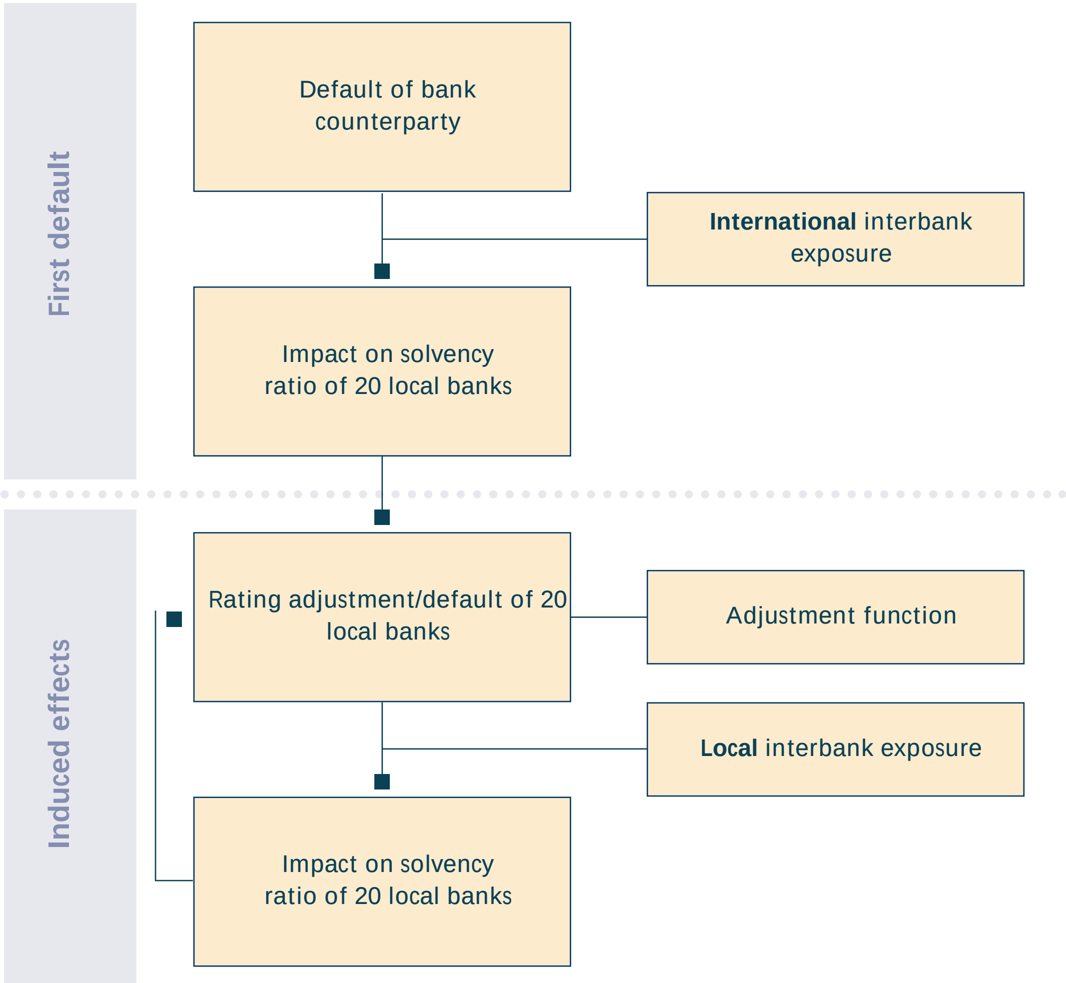
At the start of the modelling process, a default by one of the main counterparties in the interbank market is postulated. Selection of such counterparties is based on the banks' quarterly prudential report on concentration risk, which includes interbank assets and liabilities in both balance and off-balance sheets. Guided by considerations of representativeness and manageability, 24 bank counterparties, all of them being major European banking groups, have been retained. After this, an assessment is made of the impact of this first default on the solvency of Luxembourg banks. In this context, only the twenty most significant local banks in balance sheet terms are considered.

It is assumed that the first default corresponds to a 100% loss of the commitments held by a local bank in relation to the defaulting counterparty. Each local bank thus sees a reduction in own funds equal to the sum of its interbank commitments to the defaulting group. Following this, an adjustment is postulated in the rating of each of the twenty Luxembourg banks based on the amount of their equity affected by the first instance of default. This rating adjustment creates induced effects ("contagion" effects), on the basis of the successive provisions which the local banks form based on the successive reduction in the credit ratings granted on the local interbank market to local bank counterparties. In this context, it is assumed that the own funds of a local bank, due to its exposure to another local bank having rating X, are reduced by an amount equal to the expected loss, i.e.

$$\boxed{\text{probability of default of a counterparty rated X * estimated loss in the event of default * exposure}}$$

These contagion effects may potentially generate multiple defaults to the extent that the payment default of a local bank endangers the solvency of its lending banks, which in turn risk destabilising the lending banks' own counterparties.

Illustration of the simulation exercise



5.2.3. Solvency and interbank risks

The subsequent figures summarize the simulation results given an assumed recovery rate of 50% and a rating adjustment function as defined in the table below.

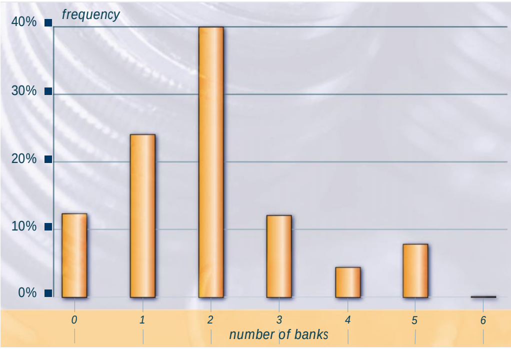
Solvency	Probability of default
[11%, + ∞)	0.04%
[10%, 11%)	0.19%
[9% , 10%)	1.40%
[8% , 9%)	6.60%
[7% , 8%)	25.35%
[6% , 7%)	100.00%
[0% , 6%)	100.00%

This table shows the default probability based on the bank's rating as identified by its solvency ratio. Thus, for a solvency ratio below 6%, default is assumed to be the sure event.

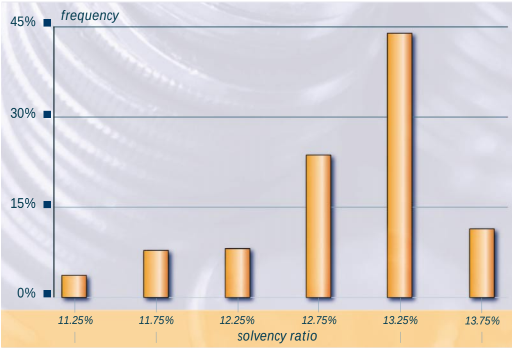
The illustrations below detail the impact of interbank payment default scenarios on the own funds of the major local banks.

Results of interbank simulation

Distribution of number of undercapitalisations



Distribution of average solvency ratio



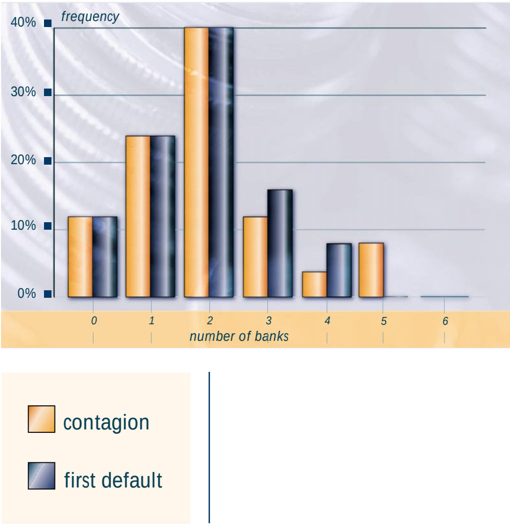
The graph on the left associates frequency of scenarios to the number of banks becoming undercapitalised, i.e. where their solvency ratio falls below the regulatory threshold of 8%. Thus, in 10 scenarios out of 24, i.e. 40% of cases, exactly two local banks were under-capitalised. Furthermore, there is no scenario which endangers the capitalisation of more than five local banks at once.

The graph on the right takes into account the amount of interbank commitments. It shows the distribution of the average solvency ratio across all 24 scenarios. In 11 scenarios, i.e. 44% of observations, this aggregate ratio lies between 12.75% and 13.25%.

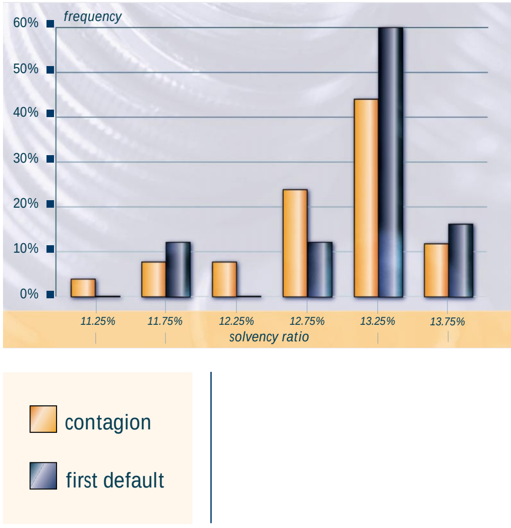
The following illustrations contrast the results of the simulations with and without induced effects. They allow an assessment of the relative importance of the sole contagion effects.

Interbank simulations with and without contagion

Distribution of number of undercapitalisations



Distribution of average solvency ratio



Taking into account induced effects at the local level only marginally modifies the impact on own funds due to a single initial default. Thus, the graph on the left only shows a slight flattening out in the distribution of undercapitalisations. As for the aggregate solvency ratio, the average drops by 0.2%, with a standard deviation up by 0.06%.

Finally, it is noteworthy that the robustness of our results are underscored by a sensitivity analysis in relation to the parameters (recovery rate and adjustment function).

5.2.4. Evaluation

Across all 24 scenarios, the aggregate solvency ratio for the twenty local banks remains high. Indeed, it never falls below 11.17%. However, this average figure does mask significant disparities. On average, for each scenario, we find two banks in a position of undercapitalisation, one of which loses all of its own funds.

In view of the sums committed – average interbank exposure amounts to some 500% of average own funds – these results appear comforting. Moreover, they are also encouraging in terms of the local systemic risk, since the effect of the first default largely outweighs local contagion effects.

However, it is important to put these results into perspective. First of all, we are working with equally probable, independent and partial scenarios which use as their basic hypothesis default on the sole interbank market of just one of the major international banking groups. Moreover, the task remains to assess the reliability over time of the conclusions reached, by re-running the exercise over several separate periods.