Belgian corporate finance in a European perspective

V. Baugnet
M.-D. Zachary

Introduction

Analysis of the financing of non-financial corporations on the basis of aggregate data may mask significant disparities, particularly according to the firm's size and its sector of activity. Thus, small firms are generally considered to depend heavily on bank credit and to encounter more problems in raising finance than larger companies. Moreover, the sector of activity in which the firm operates may necessitate a particular type of finance (e.g. very long-term finance in the sectors involving major infrastructure projects; venture capital in the innovative sectors). This article aims to demonstrate the influence of size and sector of activity on the method of financing businesses in Belgium. Taking account of the influence of these factors, the financial situation of Belgian firms is then compared with that of firms in the euro area, the differences being viewed in the context of the respective institutional frameworks. It is in fact probable that certain institutional characteristics, such as the degree of investor protection, transparency and the information available via the markets, the level of competition or the tax system, influence the form of finance chosen by firms.

Overall, this analysis is based mainly on the statistics obtained from the balance sheets and profit and loss accounts of Belgian firms, aggregated by size class and by sector of activity. The BACH (Bank for the Accounts of Companies Harmonised) database managed by the European Commission permits valid comparison between Belgian and euro area firms. Analysis of the results of recent surveys conducted among certain categories of firms in Belgium and in the European Union also provides a more qualitative view of corporate financing conditions.

1. Description of the data and methodological details

1.1 Breakdown by size and by sector

Before compiling and analysing the financial structure indicators, it is useful to break down Belgian firms simultaneously by sector of activity and by size class. That breakdown will probably not be uniform, as some sectors are dominated by the massive presence of firms of a particular size. The financial structure indicators are therefore subject to the combined influence of two factors – size and sector of activity – which the analysis conducted throughout this article will try to separate.

Obtained from the Central Balance Sheet Office, the data relate to the period from 1995 to 2005 and cover firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions), or in terms of the NACE codes, sectors D, E, F, G, H, I and K (cf. table 1). In the quantitative analysis, the size of a firm is defined only on the basis of its turnover: firms with a turnover of less than 10 million euro are classed as small; firms with a turnover between 10 and 50 million euro (not inclusive) are classed as medium-sized, and firms with a turnover of 50 million euro or more are classed as large.

Small firms are by far the most numerous (97 p.c. of the total number of firms) and account for 39 p.c. of total employment, while generating 32 p.c. of the value added produced. Despite their small number (less than 1 p.c. of the total number of firms), large firms dominate in terms of employment and value added, with 42 p.c. and 51 p.c.

TABLE 1 BREAKDOWN OF BELGIAN FIRMS[1] BY SIZE CLASS AND BY SECTOR OF ACTIVITY
(percentages of the total)

	Number of firms	Employment	Value added
By size (average 1995-2005)			
Small	97.4	39.3	31.6
Medium-sized	2.0	19.2	17.9
Large	0.6	41.5	50.5
By sector of activity (2005)			
D Manufacturing	9.0	31.0	34.0
E Electricity, gas and water supply	0.1	1.5	4.0
F Construction	11.7	9.9	6.7
G Wholesale and retail trade	30.2	22.0	20.5
H Hotels and restaurants	6.8	3.4	1.8
I Transport, storage and communication	4.7	13.8	13.9
K Real estate, renting and business activities	37.6	18.5	19.1

Source: NBB (Central Balance Sheet Office).
(1) Only firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions).

respectively. Medium-sized firms account for 19 p.c. of total employment and generate 18 p.c. of value added.

From the sectoral point of view, taking all size classes together, three sectors dominate the Belgian economic landscape in terms of employment and value added. First comes the manufacturing sector (34 p.c. of value added and 31 p.c. of employment), followed by the wholesale and retail trade sector (21 p.c. of value added and 22 p.c. of employment) and the sector comprising real estate, renting and business activities (19 p.c. of value added and employment). The transport and communication sector represents a significant share (14 p.c.) of value added and employment. Finally, the construction sector employs 10 p.c. of the labour force and accounts for 7 p.c. of the value added produced. The other two sectors, namely energy and hotels and restaurants, are of minor importance, at least from an aggregate point of view.

Small firms are more concentrated in the highly labour-intensive service sectors, such as hotels and restaurants, construction, the sector comprising real estate, renting and business activities, and to a lesser extent trade. This is counterbalanced by a much smaller presence in the highly capitalised sectors such as energy, transport and communication and the manufacturing sector. Large firms present the opposite sectoral specialisation: they are the source of around 70 p.c. of the value added produced in the said highly capitalised sectors, while having a much smaller presence in sectors such as construction and hotels and restaurants. Conversely, large firms dominate in terms of value added in the trade sector, reflecting the importance of mass marketing in Belgium. Finally, the sectoral breakdown of medium-sized firms is in an intermediate position between that of the other two groups of firms.

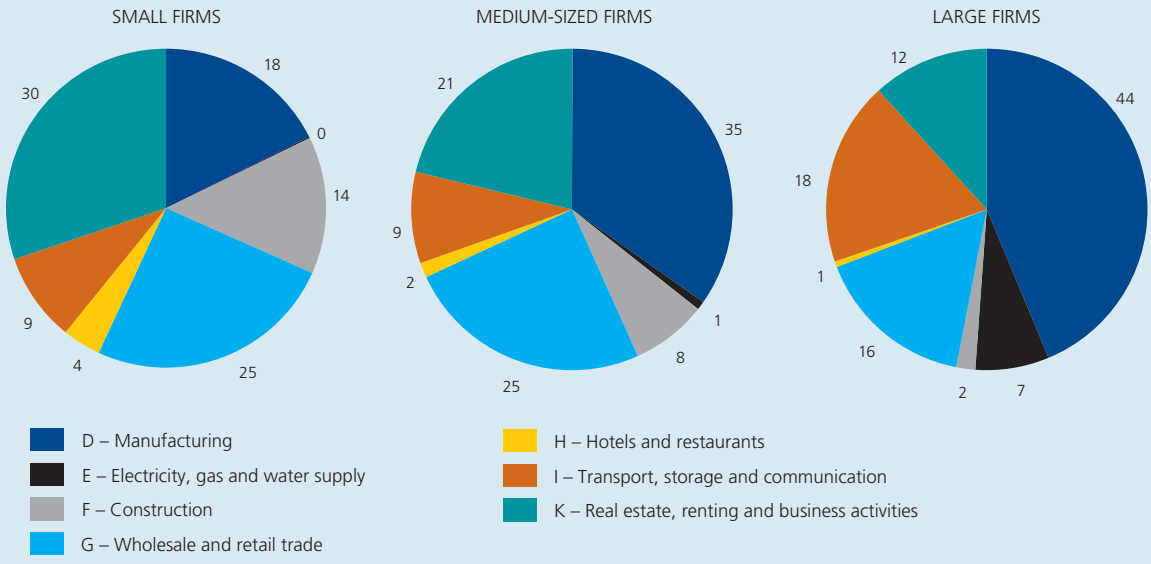
1.2 Method of adjusting the financial indicators

In order to reveal the respective influence of the firm's size and sector of activity on the firm's financial structure, the "gross" data obtained from the Central Balance Sheet Office were adjusted. To reveal the effect of "size", the adjustment consisted in imposing on each size class the same sectoral structure as that observed at aggregate level (taking all size classes together). In analytical terms, that is expressed as:

$$Y(d)_t = \sum_s y(d)_{s,t} \cdot w_{s,t}$$

where $Y(d)$ = aggregate value of the variable at the size class d level
$y(d)_s$ = individual value of the variable at the size class d – sector s level
w_s = weight of each sector in total value added (taking all size classes together)
s = 1,…S sectors
d = 1,…D size classes
t = 1,…T years

CHART 1 SECTORAL BREAKDOWN OF VALUE ADDED BY SIZE CLASS IN BELGIUM (1)
(2005)



Source : NBB (Central Balance Sheet Office).
(1) Only firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions).

At the same time, to show the "sector" effect, the adjustment means considering that the class structure within each sector is equivalent to that observed at aggregate level (taking all sectors together), expressed as :

$$Y(s)_t = \sum_d y(s)_{d,t} . w_{d,t}$$

All the indicators were calculated separately for the period from 1995 to 2005, but only the averages for the period are presented in this article, which does not address the cyclical aspects of corporate finance.

Multiple indicators are used to describe the financial structure. First, the debt level is examined as a ratio of equity (debt-to-equity) or total assets (debt-to-assets). While the former ratio illustrates the traditional balance between debt and equity, the latter takes account of the nature of the business activity, whether or not it is capital-intensive, and the corresponding requirements in terms of investment and finance. These two indicators also permit an assessment of the sound and balanced overall financial structure of the business.

The nature of the debt is analysed next, in this case the respective percentages of bank loans, trade credit and other credit in the total debt (1) and the maturity of the debt (short-term versus long-term debt). The financial costs of debt in the form of interest charges are examined in relation to both financial liabilities and cash flow. While the first ratio estimates the average cost of the debt, the second takes account of the financial burden which debt repayment places on the business, in comparison with the available cash flows. The concept of interest charges covers the interest paid on all forms of borrowing, be they granted by credit institutions or by other non-financial corporations (intra-group financing), or interest paid on corporate bonds issued.

Finally, the structure of the firms' liabilities is considered in the context of their asset structure. Combined with examination of their investment policy, this sheds light on the financial position of the firms in relation to the nature of their activities. The simultaneous examination of the two sides of the firms' balance sheets also permits an assessment of their liquidity and solvency.

(1) The data used do not include fixed-income security issues.

2. Size and financial structure

Various points suggest that small firms use different methods of financing from larger firms, or may even be subject to financial constraints.

Problems of information asymmetry are probably more significant in the case of small firms, which often suffer from a degree of information opacity (OECD, 2006). Unlike large firms, they do not issue securities which are systematically quoted on the financial markets, so that they are less likely to be tracked by analysts. There is less publicity surrounding their activities or the contracts which they conclude with their customers or suppliers. Consequently, small firms cannot credibly convey their quality and may have difficulty building a reputation (Berger and Udell, 1998). That is particularly true since a small firm may also be a young firm and/or a firm entering a riskier sector or a less developed or totally new niche (innovation). Since information asymmetry entails costs (screening, contracting, monitoring costs, etc.) for the lender, those costs may limit access to finance for small firms. In addition, if the costs have a fixed component, the average cost declines the larger the borrower, encouraging the banks, for example, to prefer larger customers. Small firms generally have fewer assets available as collateral, to protect creditors against adverse selection or moral hazard problems. Finally, small firms have less bargaining power than larger companies.

2.1 Quantitative analysis

The analysis below compares the financial structure indicators in the three firm size classes (small, medium-sized and large). The gross indicators were adjusted to give the same sectoral breakdown within each size class, corresponding to the sectoral breakdown in the economy as a whole (cf. section 1.2).

There is no apparent linear relationship between the firm's size and its debt level, whatever the indicator used (debt-to-equity, debt-to-assets or debt/cash-flow). On the basis of these three indicators, medium-sized firms display the highest debt levels, but without being significantly different from the other two classes. It is important to mention that the concept of debt calculated on the basis of the balance sheet includes all types of debt, including trade debts, tax liabilities, wages and social contributions due, debts contracted in relation to partners or associate companies, in addition to amounts owed to credit institutions.

Conversely, the debt structure, and especially bank loans as a percentage of the total debt, seems to depend on the firm's size. Small firms are more dependent on bank loans than medium-sized firms, which themselves make more use of bank loans than large firms. Medium-sized firms make greater use of trade debt than their colleagues. This method of financing, which is relatively expensive, may prove useful for managing cash flow. In some cases, suppliers have more information than the banks on the activities of their customers, and/or can use trade credit as an incentive. Finally, the other debts, which include non-trade debts contracted in relation to partners or affiliated companies, are slightly higher in the case of small and large firms. It can be assumed that, in the case of large firms, this concerns intra-group loans which are generally tax efficient, and may be concluded at international level. In the case of small firms, they are more likely to be loans granted by partners or family and friends. The average debt maturity does not vary linearly with the firm's size.

Interest charges expressed as a percentage of total debts are slightly higher for small firms than for the others. In relation to cash flow, these charges also decline the larger the firm.

TABLE 2 FINANCIAL STRUCTURE INDICATORS: INFLUENCE OF THE SIZE[1]

(averages 1995-2005, percentages)

	Debt-to-equity	Bank loans as a percentage of total debt	Cash as a percentage of total assets	Interest charges as a percentage of cash flow
Small	165.0	29.2	6.0	32.7
Medium-sized	175.8	24.3	4.0	29.7
Large	164.5	21.5	1.8	27.3

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same sectoral breakdown in each size class. All financial indicators, including those not illustrated in the body of the article, are presented in table A in the annex.

The breakdown of the assets into their main categories, namely tangible assets, financial assets and current assets, displays no fundamental difference according to firm size, except for a larger proportion of financial assets in the case of large firms. Nonetheless, it is apparent that the smaller the firm, the larger the proportion of its assets held in cash form, which may be interpreted as a sign that the firm is anticipating financial constraints. In relation to firm size, investment presents a U profile: it is lower in medium-sized firms than in small and large firms.

2.2 Qualitative analysis

The greater use of bank loans by small firms is confirmed by examination of the degree of credit use, namely the ratio of bank credit used to the credit authorised. Broken down by size of firm, the Belgian data show that the degree of credit use varies in inverse proportion to the firm's size. This may be due to the absence or virtual absence of alternative methods of financing for small firms, but could also reflect a negative correlation between the size of the borrower firm and the assessment of the risk. Thus, banks grant credit facilities more readily to medium-sized and large firms, which use a smaller proportion of the credit available than small firms.

The survey results may also enhance the quality of our knowledge of finance specific to SMEs. However, caution is required in attempting to compare the results of different surveys because, apart from methodological differences, such as sampling, the wording of the questions, etc., the timing of the survey may also have a major influence on its findings. This section reviews the investment survey conducted in Belgium and the Eurobarometer survey on SME finance.

Every autumn, the investment survey which the Bank has conducted since 2002 asks Belgian firms about their perception of bank lending conditions. According to this survey, there is no noticeable difference in the overall assessment of bank lending conditions according to the firm's size, either in terms of level or trend. Thus, the three categories of firms (small, medium-sized and large) saw a very similar deterioration in lending conditions in 2006, which suggests that they encountered the same interest rate rise, the main cause of the deterioration.

Nevertheless, the more detailed data seem to indicate, over the observation period as a whole, that small firms are less satisfied in regard to fees and the collateral demanded for access to credit.

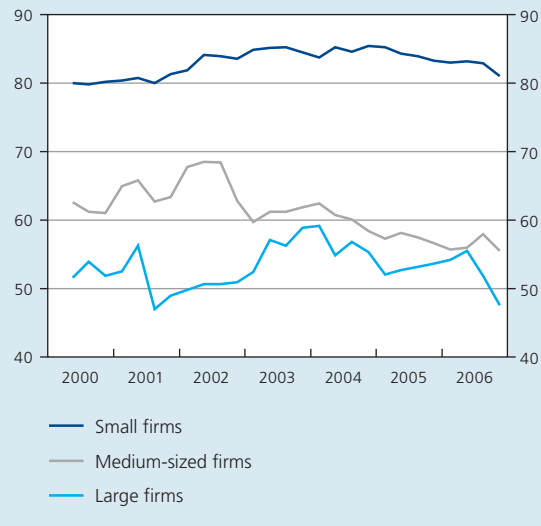
The Eurobarometer survey on SME finance was conducted by telephone in September 2005, among 3,047 SMEs in the European Union (15 countries) employing between 1 and 249 persons. It aimed to assess the problems facing SMEs in gaining access to finance for their business. In Belgium, 202 firms were interviewed.

The survey conducted on a European scale by Eurostat guarantees that the data are representative for each country and permits comparisons between countries. It also presents the results by size of enterprise at European level: micro enterprises (under 10 workers), small enterprises (between 10 and 49 workers) and medium-sized enterprises (between 50 and 249 workers).

One of the questions which this survey addressed concerned barriers to the expansion of the activities of SMEs. The results offer a clearer perspective of the difficulties facing SMEs in financing their business. Although those difficulties are real, it is only in a few cases that they become a genuine problem, and less often in Belgium than in the EU-15. When asked what would best ensure their future development, only 14 p.c. of European SMEs cited a better access to the various sources of finance. In Belgium, only 6 p.c. mentioned that. This criterion ranks third in importance in the EU-15, after social and fiscal regulations more suited to their economic sector,

CHART 2 DEGREE OF USE OF AUTHORISED CREDIT BY SIZE CLASS (1) IN BELGIUM

(outstanding total at end of quarter, percentages)

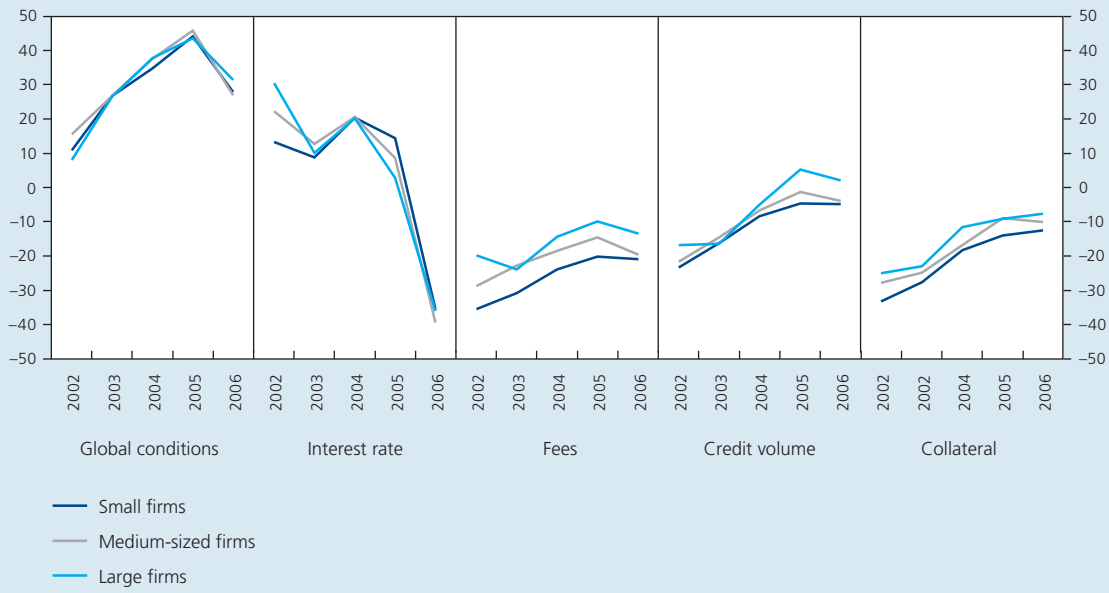


Source: NBB.

(1) Companies which filed their annual accounts in the abbreviated format are classed as small firms. Those which filed full format accounts are classed as large or medium-sized according to whether their turnover in two consecutive years exceeded or did not exceed 37.2 million euros.

CHART 3 INVESTMENT SURVEY : ASSESSMENT OF LENDING CONDITIONS BY SIZE CLASS IN BELGIUM [1]

(balance of positive and negative replies, percentages)



Source : NBB (Investment survey).

(1) Companies employing between 1 and 49 workers are classed as small firms. Those employing between 50 and 249 workers are classed as medium-sized and those with 250 workers or more are classed as large.

and better qualified people available on the market. In Belgium, easier access to means of financing comes fifth in order of importance, well behind social and fiscal regulations (cited by 41 p.c. of SMEs) and the availability of skilled people (18 p.c.).

Another question in the Eurobarometer survey concerned SMEs' perception of access to bank finance which, according to the survey, is the most commonly used method of covering their financing requirements. Sentiment concerning the ease of access to this type of credit appeared to be mixed. Overall, for all SMEs in the EU-15, 46 p.c. of firms regarded access to bank loans as easy, a figure close to that for Belgium (45 p.c.), while 47 p.c. (42 p.c. for Belgium) found it difficult. The analysis of the results recorded wide variations between countries.

Moreover, the larger the firm, the easier the perceived access to bank loans : 59 p.c. of medium-sized firms in the EU-15 considered access easy, against 47 p.c. of small firms and 46 p.c. of micro enterprises.

The business manager's view of the banks' attitude was examined in more detail via five questions concerning the banks' behaviour as regards business loans, the support received from bankers, their understanding of the sector of activity's specifics, the degree to which the credit offered by banks corresponds to the business' needs and finally, the need for the company to obtain a bank loan to develop its activities. According to these criteria, SMEs seem to have a fairly positive attitude towards access to bank loans. On average, in the European Union (EU-15), 51 p.c. of firms interviewed gave replies which were positive overall. That percentage was higher in Belgium, at around 57 p.c.

3. Sector of activity and financial structure

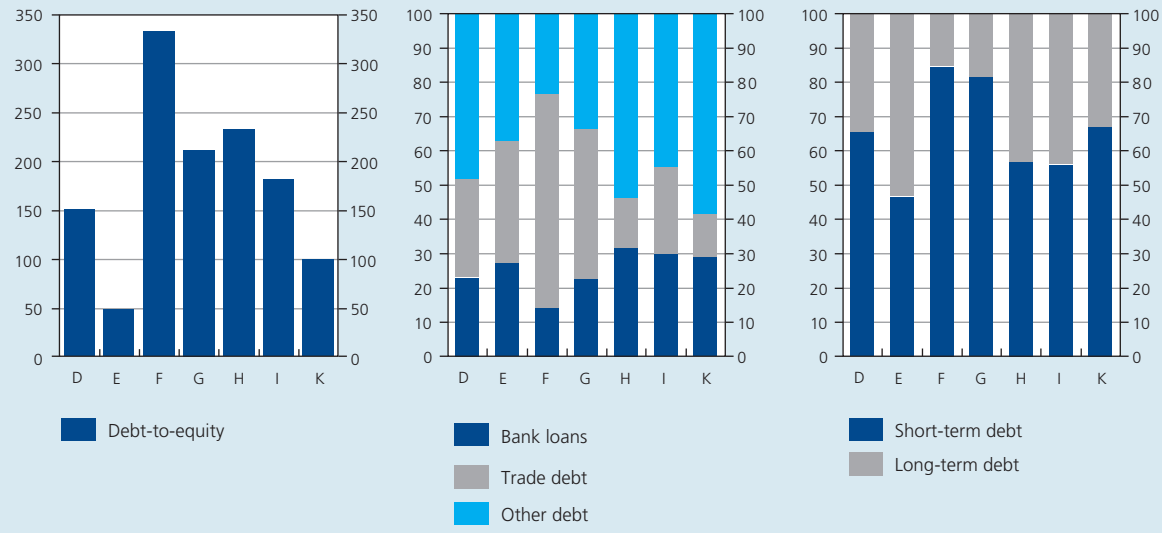
3.1 Quantitative analysis

3.1.1 The financing of traditional sectors

From the point of view of total debt, measured by the debt-to-equity, debt-to-assets or debt/cash flow ratios, the hotels and restaurants sector, the wholesale and retail trade sector and – above all – the construction sector appear to be much heavily indebted than the others. Conversely, the energy sector, the manufacturing sector and the sector comprising real estate, renting and

CHART 4 SCALE, STRUCTURE AND MATURITY OF DEBT OF BELGIAN FIRMS: INFLUENCE OF THE SECTOR OF ACTIVITY(1)

(averages 1995-2005, percentages)



Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same breakdown by size class in each sector. All financial indicators, including those not illustrated in the body of the article, are presented in table B in the annex.

business activities exhibit debt ratios which are generally below average.

The construction and trade sectors, which have very heavy debt levels on the whole, record a larger proportion of trade debt while the proportion of bank loans is smaller than in the other sectors. The hotels and restaurants sector, transport and communication and real estate, renting and business activities are the sectors which record the highest proportion of bank loans in their total debt.

The average maturity of the debt also varies widely between sectors. Thus, the construction and trade sectors mainly use short-term debt: it represents over 80 p.c. of their total debt, compared to an average of 66 p.c. taking all sectors together. Conversely, the energy sector, which has very low debt levels in proportionate terms, has more long-term debt (over 50 p.c. of total debt). The hotels and restaurants sector and the transport and communication sector also have a large proportion of long-term debt.

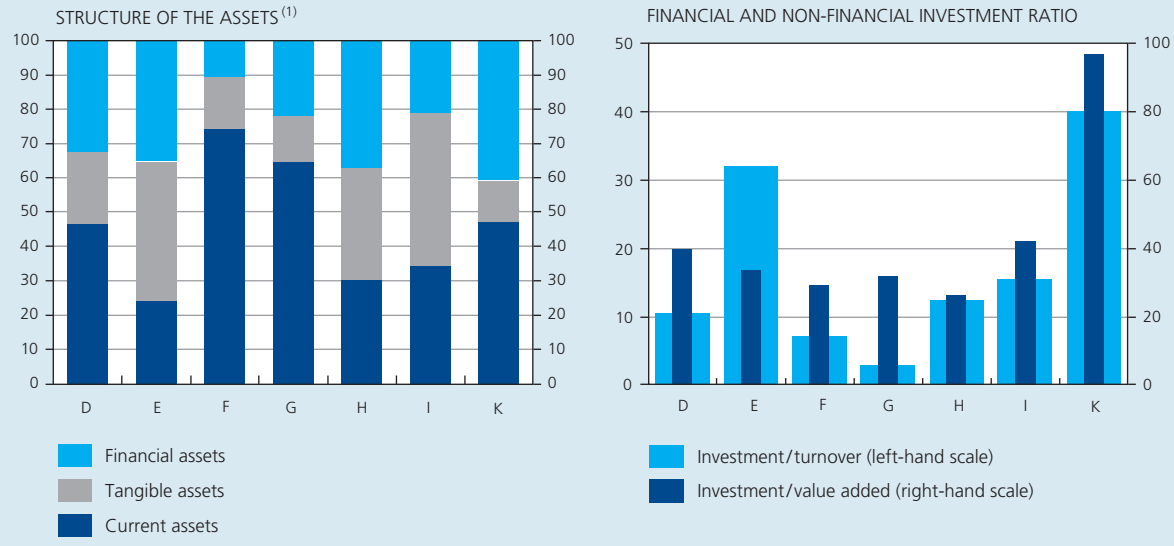
The sectoral differences in terms of debt structure and maturity are reflected on the assets side of the corporate balance sheet. Firms active in construction and trade have far more current assets, and especially cash, in proportion to their total assets: their customers pay in advance for part of the services offered (typical case in construction), or they pay in cash (mass marketing) or very promptly. That gives these sectors cash in advance to meet their regular payments to their suppliers. Since these sectors have one of the lowest investment ratios, they make little use of longer-term bank finance.

On the other hand, the energy sector, the transport and communication sector and to some extent the hotels and restaurants sector have massive tangible fixed assets, in addition to ample financial assets. The first two sectors mentioned traditionally face very large-scale investments (particularly network infrastructure); the hotels and restaurants sector, by its nature, has a huge stock of property. Firms in these sectors therefore naturally prefer a longer term method of financing. That will be facilitated by using the underlying assets as collateral, and by the substantial equity held by firms in these sectors.

The corollary to the matching maturities on either side of the balance sheet, analysed in sectoral terms, is decidedly satisfactory levels of liquidity (firms' ability to mobilise the cash resources needed to meet their short-term liabilities) and solvency (firms' ability to honour all their short- and long-term liabilities). Only the hotels and restaurants sector shows a relatively worrying level of liquidity over the observation period as a whole.

CHART 5 STRUCTURE OF THE ASSETS[1] AND INVESTMENT RATIO OF BELGIAN FIRMS: INFLUENCE OF THE SECTOR OF ACTIVITY[2]

(averages 1995-2005, percentages)



Source : NBB (Central Balance Sheet Office).

(1) Excluding intangible assets and establishment expenses.

(2) Indicators adjusted to give the same breakdown by size class in each sector. All financial indicators, including those not illustrated in the body of the article, are presented in table B in the annex.

3.1.2 Financing innovation

Innovation, like the establishment of a business, is a risky activity in view of the associated high level of uncertainty. The analysis which follows tries to ascertain the extent to which the high level of uncertainty may affect the type of investors, or the form of financing, in the "innovative" sectors.

It can be assumed that the banking sector is more averse to the risk entailed in financing innovation which – apart from the usual problems due to asymmetric information – arises because the firms which devote much of their activity to R&D often also have insufficient collateral (cf. in particular OECD, 2006, and Carpenter and Petersen, 2005).

Venture capital, and more particularly that provided by business angels and venture capitalists, is another possible source of finance for innovative companies. The government also has a major role to play in supporting this market, particularly by supporting SMEs with a strong focus on R&D.

The definition of the innovative sectors analysed in this section is based on the OECD classification, which proposed a method of classifying the industrial sectors and manufactured products of member countries according to their technology intensity (OECD, 1997). This classification work identified the most innovative sectors according to their level of technology. According to this classification, the sectors identified as high-technology or medium-high technology are as follows (the corresponding NACE codes are given in brackets):

- chemicals (24), including pharmacy (244);
- machinery and equipment (29);
- information and communication technologies (30, 32);
- electrical machinery and apparatus (31);
- medical, precision and optical instruments, watches and clocks (33);
- manufacture and assembly of motor vehicles (34);
- manufacture of other transport equipment (35), including aircraft and spacecraft (353).

Together, these subsectors – which all form part of the manufacturing sector – represent the innovative sector in the analysis which follows. Given the very great importance of chemicals in Belgian industry, and their specific characteristics, particularly the very high R&D costs, the

TABLE 3 FINANCIAL STRUCTURE INDICATORS: INFLUENCE OF INNOVATION[1]
(averages 1995-2005, percentages)

	Debt-to-equity	Bank loans as a percentage of total debt	Short-term debt as a percentage of total debt	Interest charges on the total debt
Non-innovative manufacturing	165.3	23.4	64.1	3.6
Innovative manufacturing[2]	175.7	17.0	78.1	3.2
Chemicals	108.0	15.9	63.0	3.4

Source: NBB (Central Balance Sheet Office).
(1) Indicators adjusted to give the same size class breakdown within each sector.
(2) Excluding chemicals.

high degree of globalisation and the massive presence of medium-sized and large firms, this sector was considered separately. The analysis below therefore compares the financial structure characteristics of the non-innovative manufacturing sector with the innovative manufacturing sector and the chemical sector. By analogy with what was done in the previous sub-section, the gross data obtained from the balance sheets were adjusted according to the average breakdown by firm size class for the economy as a whole, in order to neutralise the effects of size on the financial characteristics of the subsectors analysed.

In terms of overall financing structure, viewed according to the debt-to-equity ratio, innovative firms appear to be more indebted than non-innovative firms. Conversely, calculated for the chemical sector alone, the debt ratio seems very much lower than in the other sectors examined. A more detailed analysis of the financial ratios indicates that it is not the absolute debt level that causes this situation: in relation to turnover, debt is lower in the innovative sectors than in the non-innovative sectors, while firms in the chemical sector record an even higher ratio. It is essentially the level of equity capital, very substantial in the chemical sector but significantly lower in the other innovative sectors, that influences the debt-to-equity ratio.

As part of the overall debt, the use of bank loans is lower in the innovative sectors (chemicals and others) than in the rest of the manufacturing sector. That may be a sign that banks are somewhat nervous about the riskier sectors; if that is so, it is apparently associated with a degree of credit rationing rather than the charging of higher rates, as is evident from the average interest charges in relation to the debt, which differ only very slightly according to whether the sector is innovative or not. The very high degree of globalisation in the chemical sector, and particularly in pharmaceuticals, is probably reflected in significant intra-group financial flows, which automatically reduce the proportion of bank loans in the total loans received.

Finally, it is apparent that the innovative sectors, excluding chemicals, receive considerably more short-term loans than the more traditional sectors. This is in line with the theory of staging[1] which says that, when faced with riskier projects, investors (banks or others) stagger the funds granted in order to minimise the risk of losses and to impose some discipline on the managers by maintaining the threat of not renewing the loan.

3.2 Qualitative analysis

This section reviews the various surveys available on the financing of innovative firms, and details their results for Belgium, comparing them with European data if they exist.

The CIS, Community Innovation Survey (European Commission, 2004), is one of the first sources of information here. It supplies data on the barriers to the development of innovation, and is conducted in all the European countries, covering firms with 10 or more employees via a common questionnaire and a survey methodology devised by Eurostat, permitting valid comparisons at European level. The results set out below come from the third Community Innovation Survey (CIS3) and cover the period from 1998 to 2001.

(1) This term is used mainly in the venture capital industry, where investors may promise to continue investing only so long as they obtain a certain return at the end of the first financing round. Staging is regarded as one of the most powerful tools to encourage the manager to improve his performance (Baeyens and Manigart, 2006).

TABLE 4 SOURCES OF FINANCE FOR SMALL BELGIAN HIGH-TECH FIRMS ACCORDING TO THEIR STAGE OF DEVELOPMENT

	Seed	Start-up	Early growth	Development
Number of observations	103	99	85	41
Percentages of cases				
Internal finance				
Personal funds of founders	82	48	28	17
Family and friends funds	35	18	12	7
Retained earnings	0	0	5	7
External debt finance				
Commercial bank loans	8	28	40	36
Government subsidies of all kind	20	33	17	14
Non-financial institutions funds	1	8	9	10
Other	1	2	3	5
External equity finance				
Business angels funds	10	20	17	5
Venture capital funds	13	26	30	21
Other	2	2	3	4

Source: Bozkaya and Van Pottelsberghe, 2004.

The results show that, in general, a greater number of firms developing an innovative activity will report factors hampering that activity than firms with no innovative activity.

Within the European Union, the main factors liable to impede the development of innovation are, in order of importance, the high costs associated with innovation (factor cited by 24 p.c. enterprises questioned), the lack of appropriate finance (19 p.c.), excessive perceived economic risks (17 p.c.) and the lack of skilled personnel (16 p.c.).

In Belgium, whatever the factor cited, the percentage of enterprises mentioning barriers to the development of innovation is lower than in the European Union. The most important factor for enterprises developing an innovative activity is the lack of skilled personnel (factor cited by 11 p.c. of respondents); next come the lack of appropriate finance (10 p.c.), the high costs of innovation (10 p.c.) and insufficiently flexible rules or regulations (8 p.c.).

Thus, the lack of finance is more noticeable to innovative firms than to SMEs in general[(1)]. That could be due to the specific financing needs of innovative SMEs, which probably find it difficult to raise appropriate funding on the market. On this subject, Bozkaya and Van Pottelsberghe (Solvay Business School) conducted a survey in 2003 on the financing of very small high-technology firms in Belgium (Bozkaya and Van Pottelsberghe, 2004). That survey was based on a sample of 103 unlisted firms active in the technology sectors (cf. above). It took place in the last quarter of 2003, covering business start-ups and spin-offs established between 1985 and 2002. Other characteristics of these firms were that they employed fewer than 50 people and had assets of less than 5 million euro. The survey also reveals the difficulties faced by these firms according to their stage of development (seed, start-up, early growth and development).

The results show that many small Belgian high-tech firms encounter difficulties in accessing external sources of funding at the early stages of development (seed and start-up). Internal financing is therefore crucial to launch and begin developing their activity. According to the survey, the entrepreneur's personal resources are the primary source of finance in the seed phase in 82 p.c. of cases; the second most important source of finance at this stage is family and friends (35 p.c.). Next come public subsidies as a source of external finance.

(1) In order to permit rigorous comparison of the two types of firm, the two surveys (Eurobarometer and CIS) would have had to be conducted more or less simultaneously, which is not the case.

During the subsequent development stages, public subsidies and bank loans gain greater importance and become the main sources of finance. According to the survey, they make up the bulk of the external finance during the start-up phase. At the next stage (early growth of the business), bank loans dominate, representing the principal source of funding (40 p.c. of cases).

Although venture capital is not among the funding sources most commonly used by very small high-technology firms, it begins to play a significant role during the start-up phase (Rigo, 2001). Its contribution is always greater than that of business angels, whatever the stage of development of the business. These two types of investors are mainly interested in firms with high growth potential. Furthermore, a recent study (Baeyens and Manigart, 2006) demonstrates that innovative companies prefer to use venture capital to finance intangible assets which have a low value as collateral, while bank loans are more appropriate to tangible investments.

In all, the results indicate a clear pattern in the use of internal and external financing sources, with external sources of funding becoming more important as the firm develops. The survey data suggest that, in general, the owner of an innovative firm uses personal funds to launch his business, and later receives public subsidies or a bank loan (secured against personal assets) in order to expand his activities. Later, once the firm gains a bigger reputation, other types of investors, such as venture capitalists and business angels, become involved.

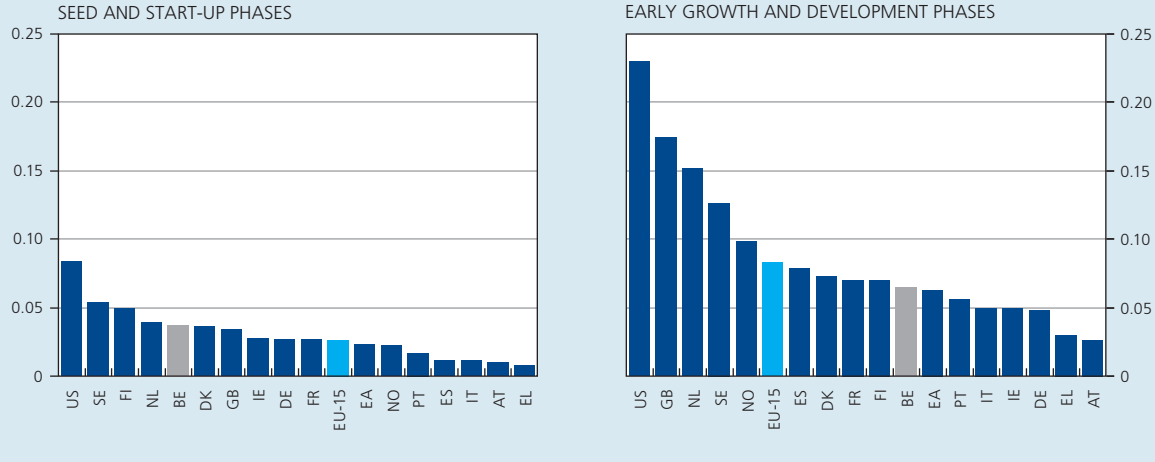
In the case of the latter players, the methods and types of investment are different and often complementary, according to the firm's stage of development; both play an essential role in the creation and growth of technology businesses. However, since they are seeking a higher expected return, venture capital providers often confine themselves to companies with strong growth potential; they may also be reluctant to invest small amounts in SMEs, given the level of fixed costs entailed in screening and monitoring their investments.

The European Venture Capital Association (EVCA) supplies quantitative data on the amounts of venture capital invested in European countries and in the United States. These data permit identification of the development stages of the firms in which the capital is invested. Since this type of investment is closely related to the business cycle, the data cited are averages for the period from 1995 to 2005.

Between 1995 and 2005, the venture capital invested in firms in the seed or start-up phase totalled 0.037 p.c. of GDP in Belgium, against an average of 0.026 in the EU-15. The United States had the highest level of investment, at 0.084 p.c. of GDP. Among the European countries, Sweden invested the most (0.054 p.c. of GDP), followed by Finland (0.049 p.c.) and the Netherlands (0.039 p.c.), while Belgium was in fourth position.

CHART 6 VENTURE CAPITAL INVESTMENTS

(averages 1995-2005, percentages of GDP)



Sources : Eurostat, EVCA.

As mentioned earlier, venture capital investments are more substantial in the early growth and development phases. In the United States, they averaged 0.230 p.c. of GDP over the period 1995-2005, against an average of 0.083 p.c. in the EU-15. Here, Belgium scored lower than the European average, at 0.065 p.c. of GDP. The European countries which perform best in this respect are the United Kingdom (0.174 p.c. of GDP), the Netherlands (0.152 p.c.), Sweden (0.126 p.c.) and Norway (0.098 p.c.).

Compared to the United States, there is a smaller supply of venture capital in the European Union, which could ultimately lead to a smaller proportion of start-ups. That situation could be due partly to the fact that, in Europe, a larger proportion of the available capital is owned by institutions which prefer safe long-term investments, whereas in the United States individuals have more direct control over their investments, are more easily persuaded to rebalance their portfolios, and are less risk averse (CCE, 2001).

There are also evident constraints as regards demand for venture capital. The survey among very small high-technology companies suggests a number of factors which explain why these firms do not use venture capital (Bozkaya and Van Pottelsberghe, 2004). The entrepreneurs consulted consider that the main problems preventing the use of venture capital are that these investors expect a quick exit (61 p.c.) and a high return (59 p.c.). Next come their unwillingness to invest small amounts (58 p.c.) and their lack of interest in investing in the initial stages of a firm's development (55 p.c.).

The authorities are therefore still concerned about the access of innovative Belgian firms to appropriate finance. The very latest information – not taken into account in the analyses mentioned above – indicates that a serious effort has been made in Belgium to improve the fiscal and regulatory environment for venture capital (EVCA, 2006). According to that analysis, Belgium is now in fourth position in terms of the quality of the venture capital environment, after Ireland, France and the United Kingdom, thus outperforming the Netherlands (7th position) and Germany (20th position). Since 2004, reforms have been introduced which have pushed Belgium up three places in this ranking. Nonetheless, there are still a number of weaknesses: small amount of savings contributed on account of pension accrual, lack of transparency in certain financing formulas, etc.

4. Specific Belgian characteristics in a European perspective

4.1 BACH database

This final section compares the financing of Belgian firms with that of firms in the euro area. As was demonstrated in the previous sections, the fact of belonging to a particular size class, and especially a particular sector of activity, influences the financial structure of firms. Therefore, before making any comparison between Belgian firms and those in the euro area, it is necessary to impose the same size/sector structure on firms in the two economies. The remaining differences in financial structure can then be attributed to purely national factors, such as institutional characteristics.

An exercise of this type was conducted jointly by the ECB and the NCBs for the purpose of producing the Structural Issues Report on Corporate Finance in the Euro Area (ECB, 2007). The BACH database, which is managed by the European Commission and contains balance sheet and profit and loss data on a sample of firms for the majority of the euro area countries, was used. Without supplying individual data, BACH offers the advantage of permitting a breakdown by size class and by sector of activity. The data are harmonised since specific accounting items have been defined on a common basis and calculated for each country. Nonetheless, since accounting schemes or valuation methods, for example, may differ from one country to another, the results must be interpreted with caution. Also, the BACH coverage in relation to the actual number of firms differs between countries: in Belgium, the cover ratio is 100 p.c., but most other countries use sampling methods to obtain a sufficiently representative population. That explains why only indicators with relatively broad coverage were selected for the multi-country analysis. The financial indicators for firms in the euro area were constructed on the basis of all the available national data, or all the countries in the euro area minus Greece, Ireland and Luxembourg.

In analytical terms, the adjustment for the structure by size and sector, effected on all the gross data, is expressed as:

$$Y(i)_t = \Sigma_d \Sigma_s \, y(i)_{d,s,t} \, . w(e)_{d,s,t}$$

where $Y(i)$ = aggregate value of the variable at the country i level

$y(i)_{d,s}$ = individual value of the variable at the size d, sector s, country i – level

$w(e)_{d,s}$ = weight of each size class d sector s combination in total value added (at the euro area level)
i = 1,…N countries
e = euro area
s = 1,…S sectors
d = 1,…D size classes
t = 1,…T years

The indicators were calculated for the period from 1999 to 2005 and are presented as averages.

4.2 Quantitative analysis

Belgian firms have a debt-to-equity ratio which is quite considerably below the average for the euro area. More specifically, the ratio between debt and turnover is higher in Belgium than in the euro area, but the ratio between equity issued and turnover is higher still, giving a balanced debt-to-equity ratio which is lower than in the euro area. Belgian firms therefore differ from their European counterparts in making greater use of external finance, and particularly in issuing more equity.

At this point, that finding calls for special comment. Belgium differs from the other euro area countries in that it probably has a larger volume of inter-company financial flows. That is due partly to the fact that, in Belgium, non-financial holding companies are included in the non-financial corporations sector in BACH, whereas they are excluded from that sector in the majority of other countries, and partly to the presence of the coordination centres in Belgium. These are included in the non-financial corporations sector and grant loans to finance their group companies, which may be based either in Belgium or abroad. The coordination centres are generally financed via unlisted share issues, which are also shown on the liabilities side of the non-financial corporations sector. Since the BACH database is compiled on the basis of non-consolidated financial statements, these financial flows taking place within the corporate sector inflate the companies' assets and liabilities in proportion to their turnover.

The other financial indicators are fairly comparable in Belgium and the euro area. The proportion of short-term to long-term debt is around 2/3 – 1/3. Bank loans account for less than 25 p.c. of total debt in both Belgium and the euro area.

4.3 Institutional factors

Apart from the presence of the non-financial holding companies and coordination centres, it is also possible that the greater use of external finance by Belgian firms is due to a particularly favourable institutional context.

In general, the literature concludes that the use of external finance by firms is encouraged by the legal context, the level of transparency and financial information, or the degree of competition on the financial markets. The ability of the legal system to apply the law, and particularly the laws protecting investors (creditors and shareholders), encourages them to supply funds and promotes the development of the financial markets. Consequently, this factor is associated with greater use of external finance in the form of debt or share issues. The transparency of a financial system, and the quantity and quality of the financial information circulated among the public, also exhibit positive links with the use of external finance, since they reduce the problems associated with asymmetric information and agency problems. Finally, the degree of competition in the financial system (and particularly in the banking sector) is generally also associated with greater recourse to external finance (and especially bank loans). According to the traditional view, more competition is accompanied by increased efficiency, so that more funds can be granted at lower cost. Competition also

TABLE 5 FINANCIAL STRUCTURE INDICATORS: IMPACT OF THE COUNTRY OF ORIGIN[1]
(averages 1999-2005, percentages)

	Debt / turnover	External equity / turnover	Debt-to-equity	Short-term debt as a percentage of total debt	Bank loans as a percentage of total debt
Belgium	92.2	61.7	156.6	64.8	22.1
Euro area	76.3	29.6	181.1	63.5	22.3

Source: ECB, 2007.
(1) Indicators adjusted to give the same sectoral and size class breakdown in Belgium and the euro area.

encourages financial intermediaries to innovate, in order to provide their customers with "tailor-made" products. However, there are also some countervailing arguments, whereby greater competition reduces the preferential access of banks to information, thereby increasing the cost of capital and reducing the volume of funds granted. Nevertheless, empirical studies tend to show that the former arguments prevail.

The choice between debt and equity may also be influenced by institutional factors, such as the level of creditor versus shareholder protection. However, the effect is ambiguous from a theoretical point of view. Thus, a high degree of protection for his rights would encourage the creditor to increase its supply of funds, whereas the borrower firm might limit its debt level for fear of losing its discretionary power in the event of financial problems. The same applies at the level of the protection of shareholders' rights, which may make the firm reluctant to open up its capital (fear of losing control) while encouraging shareholders to invest.

The arguments put forward previously regarding the influence of the degree of competition in the banking system over the use of external finance also apply in the case of the debt-to-equity ratio. The lower financing costs associated with a more competitive environment generally give rise to a higher debt-to-equity ratio. Since the interest charges on the debt are tax deductible, the tax system (in this case the corporate tax rate) is a factor which encourages firms to take on debts. However, that factor no longer applies beyond a certain debt threshold. Moreover, the tax charged on income from movable property may offset that effect if the tax on dividends is more favourable than that on interests received.

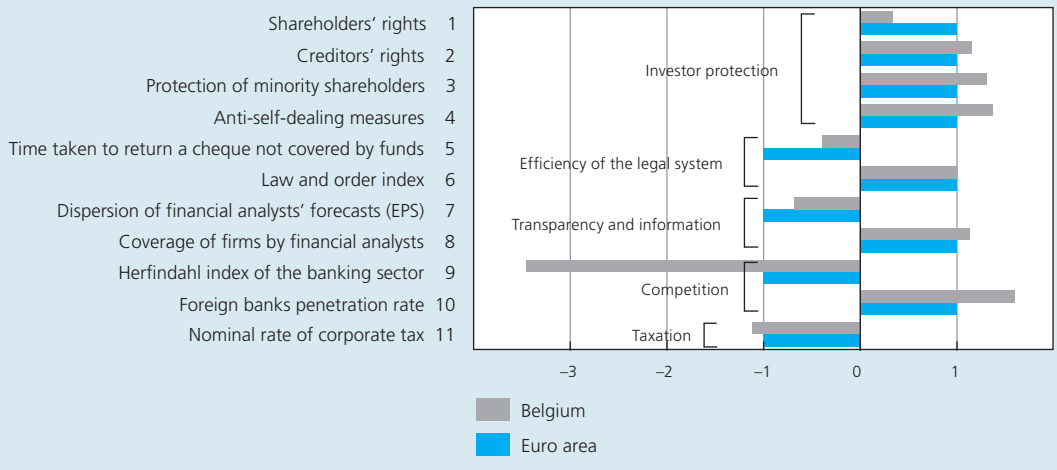
Eleven institutional indicators[1] which may explain Belgium's specific profile in terms of the use of external finance and the debt-to-equity ratio were selected. Wherever possible, the averages over the period from 1999 to 2005 (which corresponds to the period for calculating the financial indicators) were calculated for Belgium and for the euro area; otherwise, the latest available value is quoted. For the sake of clarity, the indicators were standardised to 1 for the euro area, in chart 7.

The indicators relating to the efficiency of the legal system and those concerning transparency and financial information put Belgium ahead of the euro area average. That could be a factor contributing to the abundant use of external finance by Belgian firms.

In terms of investor protection, it is difficult to state exactly how Belgium's position compares with the euro area average, as the various indicators available send out different messages. Moreover, it should be noted that in Belgium the majority of the share issues concern unlisted shares, for which the concept of investor protection is

(1) Most of the institutional indicators come from the Structural Issues Report on Corporate Finance in the Euro Area (ECB, 2007), annex 2 of which offers a detailed description (p. 103-104).

CHART 7 INSTITUTIONAL FACTORS



Sources: ECB and own calculations
Note: For indicators 1 to 4, 6, 8 and 10, a higher absolute value indicates a better performance, while for the other indicators, a higher absolute value means a poorer performance.

probably less significant, especially if these flows of funds take place between affiliated companies. Creditors' rights seem to be a little more extensive in Belgium than in the euro area.

From the competition angle, Belgium is one of the euro area countries with the most concentrated banking sector, as is evident, for instance, from the Herfindahl concentration index. On the other hand, foreign banks have a much higher penetration rate in Belgium than in the euro area, offering a contrasting view of the actual competition applicable to Belgian firms.

Finally, since the nominal rate of corporate tax is very slightly higher than the euro area level, the tax system could be a factor driving up the level of the Belgian debt-to-equity ratio.

Conclusion

When analysing corporate finance, it is necessary to take account of various factors which may cause significant disparities between firms, such as their size and their sector of activity.

Taking account of the size aspect, by neutralising sectoral disparities, there are few differences between the debt levels of small, medium-sized and large firms. Conversely, the debt structure appears to depend on the firm's size: small firms are more dependent on bank loans. That is confirmed by the high degree to which they make use of credit facilities. Nonetheless, surveys indicate that access to finance is not a major constraint for SMEs, be they Belgian or European: they perceive access to finance, and more specifically access to bank finance, as relatively easy.

In contrast, the financial structure of firms differs widely between sectors, and depends to a great extent on the associated intrinsic activity and the scale of the investments. Sectors with high investment ratios, such as the transport and communication sector or the energy sector, mainly use long-term finance. Ample equity capital enables them to maintain a balanced financial situation. Conversely, highly labour-intensive sectors, such as construction or trade, display much higher debt-to-equity ratios; their debts are mainly short term and they make extensive use of trade credit.

A more detailed analysis of the manufacturing sector also reveals differences of financial structure between firms which are classed as innovative and those which are not. In particular, if the chemical industry is excluded, the firms in the innovative sectors make less use of bank loans and record more short-term debt than firms in non-innovative sectors. That may reflect the lenders' desire to limit the risk incurred, particularly by using the threat of non-renewal of the loan to encourage the manager to behave efficiently.

The qualitative surveys appear to indicate that the financial constraint is felt more by innovative firms than by SMEs in general. That expresses a financing need specific to innovative SMEs. At the early stages in their development, they depend almost exclusively on the entrepreneur's personal resources and those of his friends and family, and venture capital only takes over in the later stages.

Finally, as regards the financing structure, a comparison between Belgian firms and their European counterparts, after neutralising the specific effects of size and sector, indicates that the former issue larger amounts of capital. Abundant intra-group financial flows and a favourable institutional context are conducive to that situation.

Annex

TABLE A FINANCIAL STRUCTURE INDICATORS: IMPACT OF SIZE [1]

(percentages, averages 1995-2005)

	Debt-to-equity	Debt-to-assets	Debt / turnover	Debt / cash flow	External equity / turnover
Small	165.0	58.1	147.3	8.2	124.6
Medium-sized	175.8	58.5	85.6	9.8	56.6
Large	164.5	55.2	71.8	9.5	34.4

	Bank loans / total assets	Trade debt / total assets	Other debt / total assets	Current assets / short-term debt	Fixed assets / long-term debt
Small	16.7	16.6	24.7	135.2	263.5
Medium-sized	14.1	22.1	22.3	136.8	288.2
Large	11.7	17.8	25.8	112.8	350.5

	External equity / total assets	(Debt + external equity) / total assets	Short-term debt / debt	Bank loans / debt	Interest charges / debt	Interest charges / cash flow
Small	26.5	84.5	67.0	29.2	3.9	32.7
Medium-sized	22.7	81.2	71.2	24.3	2.9	29.7
Large	22.5	77.8	66.6	21.5	3.2	27.3

	Current assets / total assets	Tangible assets / total assets	Financial fixed assets / total assets	Cash / total assets	Investment / turnover	Investment / value added
Small	51.2	25.1	21.2	6.0	24.8	59.6
Medium-sized	55.9	21.5	19.0	4.0	8.7	28.5
Large	42.2	18.7	35.7	1.8	12.2	45.4

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same sectoral breakdown in each size class.

TABLE B FINANCIAL STRUCTURE INDICATORS: IMPACT OF SECTOR OF ACTIVITY [1]

(percentages, averages 1995-2005)

	Debt-to-equity	Debt-to-assets	Debt / turnover	Debt / cash flow	External equity / turnover
D	150.9	57.0	58.5	6.7	22.0
E	48.7	30.4	142.6	3.6	136.6
F	332.4	70.7	75.2	14.2	11.7
G	212.1	65.5	31.7	12.8	8.4
H	232.8	57.1	79.9	8.8	41.4
I	181.9	57.3	73.7	8.8	31.5
K	99.5	47.9	282.4	10.2	268.4

	Bank loans / total assets	Trade debt / total assets	Other debt / total assets	Current assets / short-term debt	Fixed assets / long-term debt
D	13.1	16.4	27.6	120.9	272.6
E	8.4	10.7	11.3	167.0	508.1
F	10.0	44.2	16.6	123.0	282.9
G	14.8	28.6	22.1	118.3	316.7
H	18.0	8.4	30.7	100.9	641.2
I	17.0	14.6	25.7	102.2	258.6
K	13.9	6.0	28.1	146.3	353.9

	External equity / total assets	(Debt + external equity) / total assets	Short-term debt / debt	Bank loans / debt	Interest charges / debt	Interest charges / cash flow
D	21.4	78.4	65.0	22.7	3.4	23.0
E	32.5	62.9	47.2	28.2	3.2	11.5
F	11.9	82.6	84.3	14.7	1.7	19.0
G	17.3	82.7	81.4	22.3	3.2	39.9
H	27.0	84.1	61.9	31.1	3.9	36.2
I	23.6	80.8	55.3	29.9	3.4	29.3
K	38.8	86.7	67.0	28.4	3.9	40.6

	Current assets / total assets	Tangible assets / total assets	Financial fixed assets / total assets	Cash / total assets	Investment / turnover	Investment / value added
D	45.3	20.2	31.6	3.6	10.6	40.0
E	21.4	36.1	31.2	1.1	32.0	33.7
F	72.6	15.1	10.4	4.6	7.2	29.3
G	63.0	13.2	21.4	5.1	3.0	31.9
H	29.3	32.0	36.3	4.1	12.5	26.6
I	32.6	42.6	20.0	3.5	15.5	42.3
K	46.3	11.8	40.1	2.0	40.1	96.9

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same size class breakdown in each sector.

Bibliography

Baeyens K. and S. Manigart (2006), Follow-on Financing of Venture Capital Backed Companies: the Choice between Debt, Equity, Existing and New Investors, Vlerick Leuven Gent Working Paper 2006/5, 51 pp.

Berger A. and G. Udell (1998), The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycles, Journal of Banking and Finance, Vol. 22, pp. 613-673.

Bozkaya A. and B. Van Pottelsberghe (2004), The Financial Architecture of Technology-Based Small Firms in Belgium, An Explorative study, Solvay Business School Working Papers, 04/027, 13 pp.

Carpenter R.E. and B.C. Petersen (2005), Capital Market Imperfections, High-Tech Investment and New Equity Financing in Finance Markets, New Economy and Growth, Luigi Paganetto (Ed), Rome, pp. 143-162.

Central Council for Economics (CCE) (2001), De l'esprit d'entreprise à la création d'entreprise, Monthly socio-economic letter, No. 59, January, pp. 3-16.

ECB (2007), Corporate Finance in the Euro Area, Structural Issues Report, May, 132 pp.

European Commission (2004), Innovation in Europe, Results for the EU, Iceland and Norway, Data 1998-2001, Luxembourg, 295 pp.

European Commission (2005), SME access to finance, Flash Eurobarometer, No. 174, October, 142 pp.

EVCA (1996-2006), Annual Survey of Pan-European Private Equity & Venture Capital Activity, EVCA yearbook 1996-2006.

EVCA (2006), Benchmarking European Tax and Legal Environments. Indicators of Tax and Legal Environments Favouring the Development of Private Equity and Venture Capital and Entrepreneurship in Europe, December, 174 pp.

Hartmann P., A. Ferrando, F. Fritzer, F. Heider, B. Lauro and M. Lo Duca, The Performance of the European Financial System, ECB Occasional Papers, forthcoming.

OECD (1997), Revision of the High-Technology Sector and Product Classification, Paris, France, 136 pp.

OECD (2006), The SME Financing Gap, Volume I, Theory and Evidence, Paris, France, 136 pp.

Rigo C. (2001), Le financement des entreprises par capital-risque, NBB Working Paper, No. 13, February.