Internal resources, bank credit and other funding sources: what are the alternatives for businesses in Belgium?

Ch. Piette
M.-D. Zachary

Introduction

In Belgium as elsewhere, the banking system plays a vital role in financing businesses. The banks enable them to obtain additional liquidity if they have a shortage, and more importantly, they often provide firms with the necessary funds to invest in new production capacity. Although the various forms of credit which the banks offer meet most firms' needs, businesses often resort to other sources of funds.

One such source comprises internal financing, i.e. the part of the profits allocated to the capital at the end of each financial year. Some firms which are linked to Belgian or foreign groups may also obtain funds in the form of equity capital or inter-company loans from their parent or sister companies. Companies operating autonomously and wanting to strengthen their financial basis have fewer options, but they too have alternatives to bank finance.

One of those alternatives consists in using household savings. To that end, firms can in theory issue shares or bonds, but recourse to this type of funding – which mainly concerns the largest companies – is generally very limited[1], either because of difficult access to the capital markets or, more simply, because it is considered unnecessary in most cases. It is more common to obtain private funding from family and friends.

Apart from banks and households, other institutional sectors may also contribute to the financing of businesses, such as insurance corporations and other types of financial intermediaries, including private equity and venture capital companies, and business angels. These investors generally have a greater appetite for risk, so that the funding they offer is more accessible to firms proposing innovative projects which, though potentially very profitable, have a more uncertain prospect of success.

These alternatives to bank credit, whether arranged via the financial markets or by private investment, are also of some relevance for financial stability, because greater diversification of funding sources would boost the resilience of the financial sector in the event of a major macroeconomic or financial shock, by strengthening the sector's ability to provide funding for businesses. Conversely, excessive dependence on bank finance, as is currently still the case in Belgium and in other European countries, could prove harmful if credit institutions were obliged to consolidate their balance sheet to the detriment of their lending activities. This diversification of funding sources is also one of the main objectives of the Capital Markets Union project which the European Commission is currently working on and which aims, more generally, to reduce the financing costs of resident firms by lowering the barriers to cross-border investment within the Union.

That is the backdrop to this article's account of the situation regarding Belgian firms' use of the various internal or external financing instruments, and the factors which could influence their decisions on the subject. The first part of the article presents an overview of the structure and funding sources of non-financial corporations.

(1) By way of illustration, only 7 firms joined Euronext or Alternext in 2015.

In particular, it distinguishes between intra-group funding which – though it concerns only a minority of firms – plays a significant role in Belgium, and the financing of stand-alone businesses. The second part is devoted to analysing the factors that determine the use of the various forms of funding, particularly the demand factors. The empirical findings are interpreted from the point of view of the pecking order theory and the financial growth cycle theory. The third section focuses on the structure of the supply of funding in Belgium. Finally, the conclusion summarises the main lessons to be drawn from the analysis.

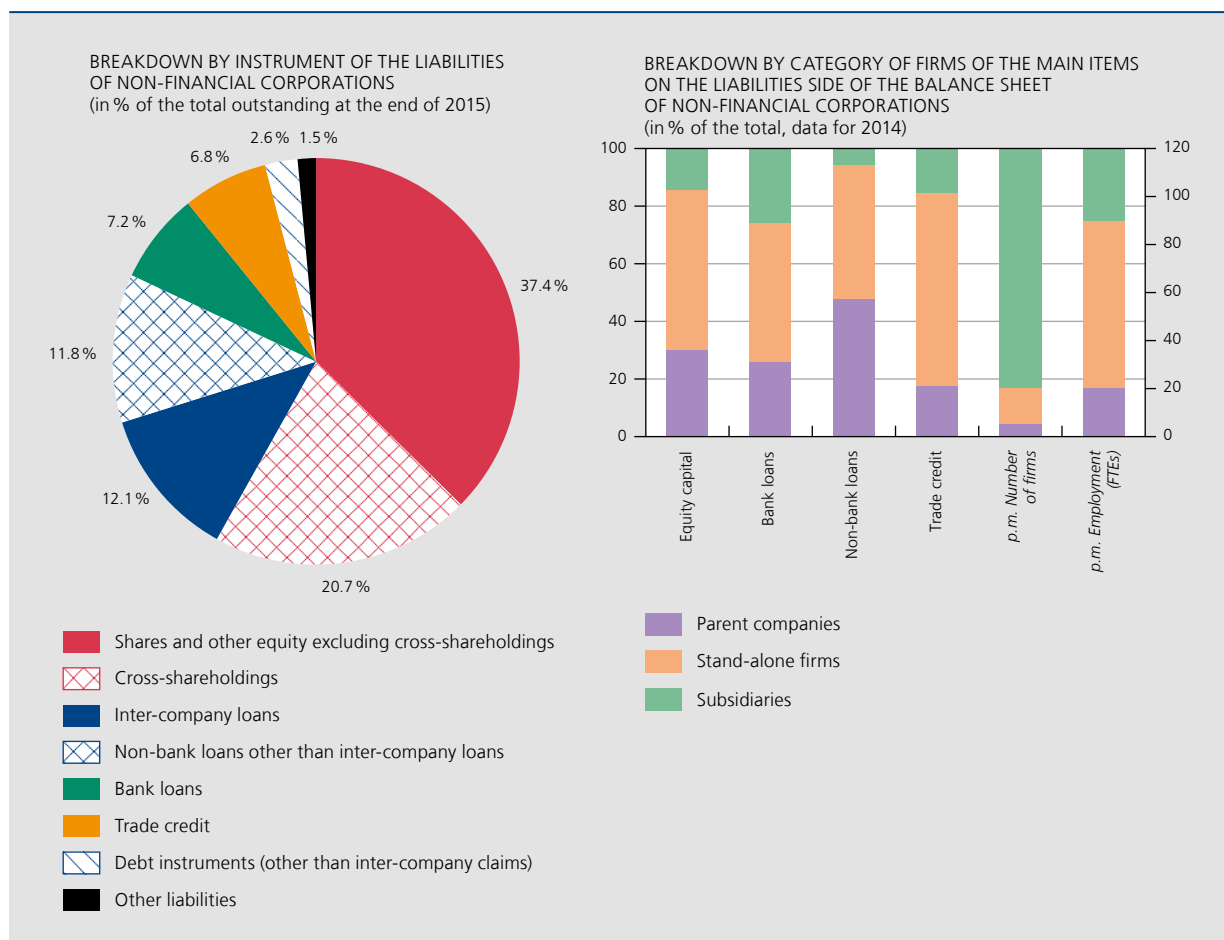## 1. Overview of the financing of Belgian companies

To understand the financing of non-financial corporations established in Belgium, it is necessary to distinguish between firms connected with a – Belgian or foreign – group and firms with no such link. Firms in the first category have some specific characteristics regarding their balance sheet structure, and they have access to funding options not available to stand-alone firms, for which bank loans or overdrafts are therefore more important. These various aspects are discussed in the four sections which make up this part of the article.

1.1 Importance of the various financing means

As is evident from chart 1, non-financial corporations are financed mainly via their equity, which encompasses both the capital contributed by shareholders or partners when the business was established and funds injected subsequently, as well as retained earnings and reserves which make up the internal pool of finance. A considerable proportion of the capital invested in Belgian firms comes from other resident firms and foreign direct investors. At the end of 2015, these cross-shareholdings

CHART 1   IMPORTANCE AND DISTRIBUTION OF THE VARIOUS FINANCING INSTRUMENTS FOR NON-FINANCIAL CORPORATIONS

BREAKDOWN BY INSTRUMENT OF THE LIABILITIES
OF NON-FINANCIAL CORPORATIONS
(in % of the total outstanding at the end of 2015)

BREAKDOWN BY CATEGORY OF FIRMS OF THE MAIN ITEMS
ON THE LIABILITIES SIDE OF THE BALANCE SHEET
OF NON-FINANCIAL CORPORATIONS
(in % of the total, data for 2014)

- Shares and other equity excluding cross-shareholdings
- Cross-shareholdings
- Inter-company loans
- Non-bank loans other than inter-company loans
- Bank loans
- Trade credit
- Debt instruments (other than inter-company claims)
- Other liabilities

- Parent companies
- Stand-alone firms
- Subsidiaries

Source: NBB (Central Balance Sheet Office and financial accounts).

made up 20.7 % of the total liabilities of companies established in Belgium, while shares and other equity held directly by individuals or institutional investors represented 37.4 %.

The other external funding consists largely of non-bank loans ; that also indicates the importance of intra-group financial links. Intra-group lending alone corresponds to 12.1 % of the total liabilities of non-financial corporations. Loans by other institutional sectors concern in particular subordinated or non-subordinated loans from insurance companies or specialist lenders (such as leasing companies), or advances received from individuals. In addition, there are trade debts which are equivalent to 6.8 % of the total liabilities. They relate mainly to the time allowed by suppliers for the payment of invoices. For comparison, bank loans represented 7.2 % of firms' liabilities.

1.2 Firms forming part of a group and stand-alone firms : two different funding structures

The breakdown of the liabilities of non-financial corporations as represented in the left-hand panel of chart 1 conceals a very heavy concentration of amounts invested by means of these various instruments in a relatively small number of firms belonging to a group. It is estimated that those firms make up 17 % of the total number of non-financial corporations established in Belgium, concentrating 86 % of the total outstanding equity on the liabilities side of their balance sheet [1]. Among firms belonging to a group, a distinction can be made between two categories, referred to in this article as "parent companies" and "subsidiaries". Parent companies are defined as Belgian firms with holdings in other firms, in Belgium itself or abroad, while not themselves being owned, either directly or indirectly, by one or more other companies. Subsidiaries are firms owned (via direct or indirect shareholdings) either by parent companies established in Belgium or by foreign companies [2]. Other firms for which no shareholding link is recorded are considered to be "stand-alone companies" [3]. They make up the vast majority (83 %) of non-financial corporations established in Belgium.

Parent companies and subsidiaries differ from stand-alone firms in their balance sheet structure – summarised in table 1 – which, in the case of the first two categories, reflects the scale of the cross-shareholdings. From an overall perspective, the financial fixed assets of parent companies and subsidiaries – which include shareholdings in associated firms and the loans made to them – represent

respectively 54.5 and 63.6 % of their assets. This balance sheet item corresponds to 15.2 % of the total assets of stand-alone companies ; it essentially concerns portfolio investments and miscellaneous claims. Of course, cross-shareholding links within groups are also evident in the liabilities of the group companies, as the equity makes up 47.1 % of the balance sheet total of subsidiaries, compared to 39.1 % of the figure for stand-alone companies. The share of the equity is larger (52.2 %) in parent companies which, by definition, are positioned at the top of the ownership structures.

Another factor which makes the funding structure of groups different from that of stand-alone companies is the larger proportion of non-bank loans in the total liabilities, that figure being higher for subsidiaries (21.3 %) than for parent companies (15.3 %). It is due mainly to inter-company loans received from parent companies or other subsidiaries in the same group, in some cases supplementing other types of non-bank loans such as subordinated loans or miscellaneous advances. The latter are likewise used by stand-alone firms, for which non-bank loans account for 8.8 % of the balance sheet total.

Despite the differences in funding structure, stand-alone companies are not necessarily less profitable than firms forming part of a group. They actually record a return on equity after tax (8.6 %) which is higher, on average, than the figures for parent companies (6.0 %) and subsidiaries (5.2 %). Moreover, their financial position is a little stronger than that of subsidiaries. In particular, their liquidity ratio in the narrow sense is higher on average (1.3 compared to 1.1 for subsidiaries), and the same applies to the solvency ratio (40.5 % compared to 40.1 %). However, the solvency ratio of parent companies is stronger since it reflects their higher capitalisation.

The large proportion of equity and non-bank loans in firms belonging to a group, be they parent companies or subsidiaries, may be due in part to the Belgian tax allowance for risk capital. Intended to replace the special scheme previously applied to coordination centres, this scheme was first

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(1) These estimates are based on annual accounts for 2014, the latest year covered by the Central Balance Sheet Office data at the time when this article was being prepared.

(2) Resident firms owned by foreign companies are identified via the results of the NBB's direct investment survey.

(3) Certain firms which have received capital contributions from private equity or venture capital companies (including pricafs) or other investment companies are not regarded as part of a group. They are therefore classified as stand-alone companies (or as parent companies if they own shareholdings). The various investment companies are identified by the National Accounts Institute in its classification of institutional sectors. Also, some of the shares issued by certain listed companies may be owned by other companies without the latter holding a sufficient stake in their equity capital to control them. These shareholding links are also disregarded, and the listed companies concerned are included under parent companies or stand-alone companies, depending on whether or not they have subsidiaries.

TABLE 1 BALANCE SHEET OF NON-FINANCIAL CORPORATIONS BY CATEGORY OF FIRMS

(data for 2014)

	Parent companies	Subsidiaries	Stand-alone companies
Number of firms [1]	19 767	41 094	288 741
of which:			
Small firms	16 941	24 869	286 889
Medium-sized firms	2 418	14 339	1 720
Large firms	408	1 886	132
Average employment (in FTEs)	15.8	26.0	1.6
Structure of the assets (outstanding amount in % of the total)			
Tangible and intangible fixed assets	24.4	13.3	42.9
Financial assets	54.5	63.6	15.2
Trade receivables	6.7	9.1	10.9
Other	14.3	14.1	31.0
Structure of the liabilities (outstanding amount in % of the total)			
Equity	52.2	47.1	39.1
Bank loans	13.4	9.5	23.2
of which: Loans at up to 1 year	2.8	2.9	3.6
Non-bank loans	15.3	21.3	8.8
of which: Loans at up to 1 year	3.5	5.6	0.5
Trade debts	6.2	7.9	9.9
Other	12.9	14.1	19.0
Financial ratios (averages [2])			
Return on equity after tax [3]	6.0	5.2	8.6
Liquidity in the narrow sense [4]	0.9	1.1	1.3
Solvency [5]	44.9	40.1	40.5
Number of days of suppliers' credit [6]	58.0	58.5	51.9

Source: NBB (Central Balance Sheet Office).
(1) Companies in financial services, government and education are excluded from the population examined.
(2) Averages for a sample from which outliers were eliminated on the basis of the interquartile range.
(3) Profit for the year divided by the equity, in %.
(4) Sum of receivables at up to one year, current investments and cash, divided by debts at up to one year.
(5) Ratio between equity and the balance sheet total, in %.
(6) Ratio between trade debts and the sum of purchases of merchandise, miscellaneous goods and services, and VAT charged to the firm, multiplied by 365. That indicator is only calculated for firms which drew up their annual accounts in the full format.
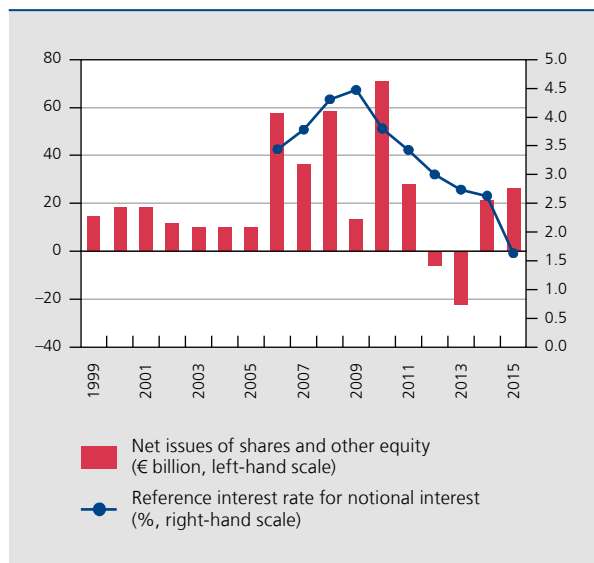
implemented in the 2007 tax year. It involves deducting from the tax base of companies an amount of notional interest, calculated as the product of a reference interest rate (based on the 10-year OLO rate) and the equity. However, certain amounts are deducted from that figure to prevent potential abuse aimed at obtaining a cascade of tax allowances via the multiplication of cross-shareholdings. In particular, the 'adjusted' equity excludes the outstanding amount of shareholdings in associated companies. But that adjustment does not take account of claims on those same companies. Thus, in order to max-imise the amount of the risk capital allowance, national or foreign groups have an incentive to concentrate equity in companies located in Belgium and then reallocate the

funds to other group companies – resident or not – in the form of inter-company loans, as the interest paid on those loans is deductible as an expense [1].

From 2006 onwards, the introduction of this tax scheme resulted in a steep rise in the amounts invested in resi-dent non-financial corporations in the form of equity, as is evident from chart 2. However, the steady decline in the reference interest rate from 2010 onwards gradually diminished the attraction of the tax incentive, and that is

(1) Burggraeve *et al.* (2008) give a more detailed description of the content of the Law of 22 June 2005 introducing the risk capital tax allowance, and they discuss in depth its impact on the financing structure of companies.

Net issues of shares and other equity
(€ billion, left-hand scale)

Reference interest rate for notional interest
(%, right-hand scale)

Source : NBB (financial accounts).
(1) Based on the average interest rate on 10-year linear bonds issued by the Belgian
State in the preceding year.

(estimates for the period 2005-2014)

	Bank loans	Non-bank loans
Parent companies	0.29	0.07
Subsidiaries	0.04	0.85
Stand-alone companies	0.60	0.07

Source : NBB (Central Balance Sheet Office and own calculations).
(1) Elasticities calculated by regression of the amounts of bank or non-bank debts
at up to one year, expressed as a percentage of the balance sheet total, on
the difference between the working capital needs and the working capital,
likewise expressed as a percentage of the balance sheet total, and the number
of employees in FTEs, labour productivity, return on equity after tax, age of the
firm, solvency, an industry dummy and another dummy variable for each year in
the estimation period.

reflected in the figures for net issues of shares and other equity in non-financial corporations. Moreover, the years 2012 and 2013 brought substantial reductions in equity in certain companies. Since the risk capital allowance encourages inter-company lending as well as the concentration of equity in certain companies, it may also be part of the reason for the scale of the non-bank loans in the liabilities contracted by firms forming part of a group, especially subsidiaries.

1.3 Short-term financing of affiliated firms

A considerable proportion of inter-company loans have a term of less than one year. They are probably connected with the working capital needs of the various companies in the group. To meet those needs, firms are able to draw on common liquidity reserves, as is apparent from the elasticity of the non-bank loans of subsidiaries in relation to their working capital needs. On the basis of an econometric analysis, that elasticity is estimated at 0.85 (see table 2). This means that if their working capital needs increase by 1 percentage point in relation to their balance sheet total, that results, on average, in an 85 basis point increase in the amount of their non-bank borrowings, likewise expressed as a percentage of the balance sheet total. That elasticity is practically zero (0.07) in the case of stand-alone companies which, when faced with a liquidity shortage, most often turn to the banks to obtain credit facilities; that is reflected in the elasticity of

their short-term bank borrowings as a percentage of their working capital needs, namely 0.60.

Furthermore, the financing facilities available to firms belonging to a group do not seem to be confined to access to mutual cash resources. The indicators relating to the number of days of suppliers' credit calculated on the basis of the data in the annual accounts, which are higher for parent companies and subsidiaries, suggest that the latter enjoy greater flexibility in their payment terms than stand-alone companies. That could be because firms belonging to the same group conduct a large proportion of their commercial transactions with sister companies.

However, the fact that subsidiaries and parent companies have access to intra-group financing does not rule out the need to turn to the banking system to fund substantial investments or to cover liquidity needs. In that regard, parent companies often meet their liquidity needs – and probably (via inter-company loans) those of their subsidiaries, too – by taking out long-term bank loans[1]. Moreover, that may also explain why the proportion of bank loans in the liabilities on their balance sheet is higher than in the case of subsidiaries. Bank funding and the arrangements that each group of companies makes to manage its cash resources thus form two complementary systems : the banks grant loans which supplement the equity of one or more group entities, and that additional funding may be reallocated, if necessary, to other companies in the form of inter-company loans.
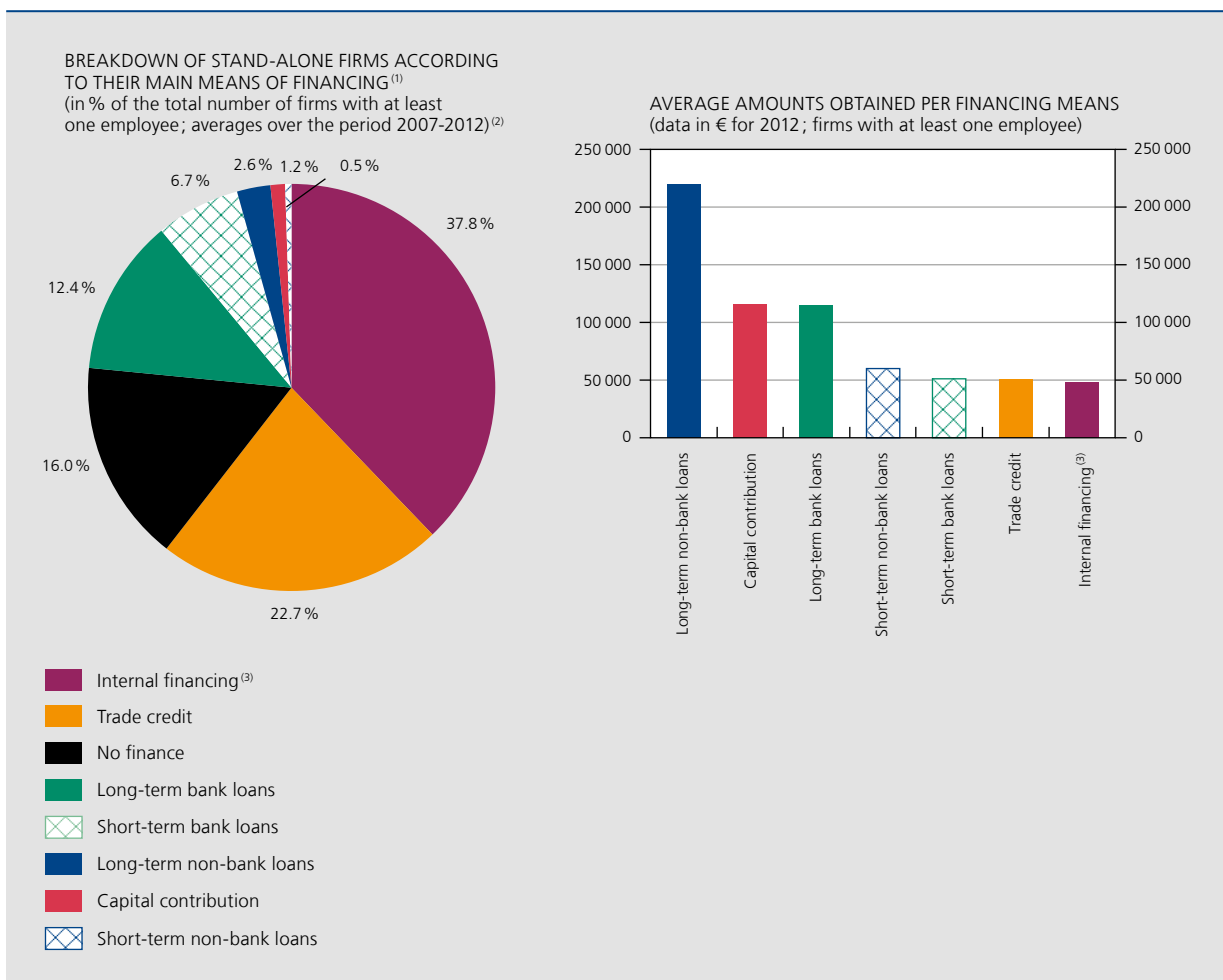
(1) That is apparent from the results of the econometric analysis described in the
annex to this article. According to these estimates, there is a significant negative
correlation between the quantity of liquidity held by a parent company and the
probability that that company will finance itself via long-term bank loans. The
same results confirm the link between the lack of liquidity among stand-alone
companies and their propensity to resort to short-term bank loans.

1.4 Sources of finance for stand-alone companies

Stand-alone firms, not having such liquidity reserves, usually finance themselves via their own resources, i.e. those generated by their operating surplus and not paid out to shareholders or partners once the annual accounts have been closed. Between 2007 and 2012, internal financing was the preferred option, on average, for almost 38 % of stand-alone firms with at least one employee (see chart 3), while others – 22.7 % on average over the same period – most often contracted trade debts. Recourse to bank loans is less common. More specifically, long-term bank loans were the main means of financing for 12.4 % of stand-alone firms. However, it should be noted that the amounts in question are generally higher than those obtained via short-term financing instruments, which are used mainly as a back-up by firms with a liquidity shortage, e.g. to pay wages or to honour other imminently payable debts. Long-term loans, from banks or elsewhere, are more often used to finance permanent assets, such as fixed capital, or perhaps to provide working capital in order to limit liquidity needs and hence recourse to short-term financing instruments. That is also the case for capital contributed after the business launch phase, and hence after the initial funding by shareholders or partners. This means of financing, which includes

CHART 3   USE OF THE VARIOUS FINANCING MEANS BY STAND-ALONE COMPANIES

BREAKDOWN OF STAND-ALONE FIRMS ACCORDING TO THEIR MAIN MEANS OF FINANCING [1]
(in % of the total number of firms with at least one employee; averages over the period 2007-2012) [2]

AVERAGE AMOUNTS OBTAINED PER FINANCING MEANS
(data in € for 2012; firms with at least one employee)

Legend:
- Internal financing [3]
- Trade credit
- No finance
- Long-term bank loans
- Short-term bank loans
- Long-term non-bank loans
- Capital contribution
- Short-term non-bank loans

Source: NBB (Central Balance Sheet Office and own calculations).

(1) A means of financing is regarded as a firm's main source of funding if the amount obtained by that means exceeds the amounts obtained via other financing means mentioned in the chart. The amounts obtained via each instrument are calculated on the basis of the differences in the outstanding amounts indicated in the corresponding items in the liabilities on the balance sheets in two consecutive years.

(2) The years 2013 and 2014 were not taken into account in calculating the averages shown in these two charts. Those years featured transfers of part of the reinvested profits and reserves to the "liquidation reserves" included in the equity capital during the transitional period provided for by the Programme-Law of 28 June 2013, raising the withholding tax on liquidation surpluses from 10 to 25 %. Those transfers have a major impact on the data concerning capital contributions for 2013 and 2014; consequently, those years are not very representative of the transactions usually effected by non-financial corporations.

(3) Internal financing include reinvested profits and amounts allocated to the reserves.

equity investment by private equity and venture capital companies to make up for any shortage of capital held by individuals, is nevertheless uncommon.

2. Determinants of the financing means used by firms

The data on stand-alone firms presented in the previous section suggest that there is a hierarchy among the various financing means used by firms, or at least a preference for some of them. The economic literature on the financing structure of firms may explain this picture and is briefly reviewed in the following sections. After that, the financing choices of stand-alone companies are examined in the light of the annual accounts data, with the aid of an econometric model.

2.1 Theoretical framework: pecking order and financial growth cycle

The hierarchy of financing instruments revealed by the data on stand-alone companies is very consistent with the pecking order theory pioneered by Myers (1984), which presents arguments for an order of preference for corporate financing means on the basis of the agency theory, asymmetric information and the signalling theory[1]. It also tallies particularly well with the financial growth cycle theory, which postulates that the financing means available to firms vary according to the firms' stage of development. These two theoretical models are briefly described below.

2.1.1 Pecking order theory

The general idea of the pecking order theory is that firms prefer self-financing in order to avoid transferring or diluting the ownership of the business, divulging crucial information to third parties, having to be accountable to the market or pay excessive transaction costs. If the funding needed for profitable investments is beyond the scope of internal financing, they opt for external financing. In that case, they prefer to use debt (bond issuance, or more generally, recourse to loans) rather than a capital increase, in view of the possible transfer of rights and information entailed in each of the two means, and the transaction costs.

The preference for internal financing is due primarily to the desire of entrepreneurs (especially owner/managers) to keep control of their company. That is why they are very reluctant to accept new shareholders, and try to find the capital they need for their business from internal

funding. If that is insufficient, managers will tend to choose funding sources that do not entail any restriction on control: first, short-term debt requiring no collateral and not subject to any conditions, then longer-term debt and finally share issuance.

The economic literature confirms that the ownership structure influences the type of financing (Mac an Bhaird and Lucey, 2010; Ferrando and Griesshaber, 2011). When business owners have family ties or similar connections, or where a sole proprietor is concerned, the company is less likely to choose external financing, particularly where the funding implies a loss of control of the business. Companies which are not part of a group likewise use more flexible instruments in general, in an effort to avoid any loss of control.

The use of internal financing also costs less than additional debt, which is in turn less expensive than issuing new shares. The existence of transaction costs that vary according to the funding source used is another reason for the hierarchy in the financing choices of stand-alone companies. Moreover, those costs reveal the limited access of SMEs to the capital markets, resulting in a funding gap for those firms. That funding gap can be divided into two components: a supply deficit (too little funding or excessive costs) and a knowledge deficit, as SME managers are generally less aware of all the external financing options and their characteristics (Sánchez-Vidal and Martín-Ugedo, 2005). Consequently, the main source of long-term financing consists of internal funds and, if necessary, bank loans.

According to the pecking order, debt is preferred to a capital increase, not only because of the lower costs involved but also because recourse to borrowing is seen as indicating that the manager is confident of the company's ability to honour its debts and avoid bankruptcy. The markets interpret that as a positive sign, so that it boosts the company's share price or the value of the business. Conversely, a capital increase triggers a fall in the share price or the value of the business because the information asymmetry between the managers – who act in the interest of the current shareholders (often the same people in the case of stand-alone SMEs) – and external investors implies that the company arranging a capital increase has to pay a high enough risk premium to attract new capital and cope with the risks associated with funding industrial

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(1) This theory drew on the work carried out by Jensen and Meckling (1976) on the agency theory, by Myers and Majluf (1984) on information asymmetries, and by Ross (1977) on the signalling theory. Although the theory was originally developed for listed companies, it is also well documented for SMEs in numerous international studies (for a review of this literature, see Domenichelli (2008), and Watson and Wilson (2002)).

projects. The new shares therefore have to be issued at a price below their market value. In the case of bond issues, that premium is lower in view of the lower risk incurred by investors.
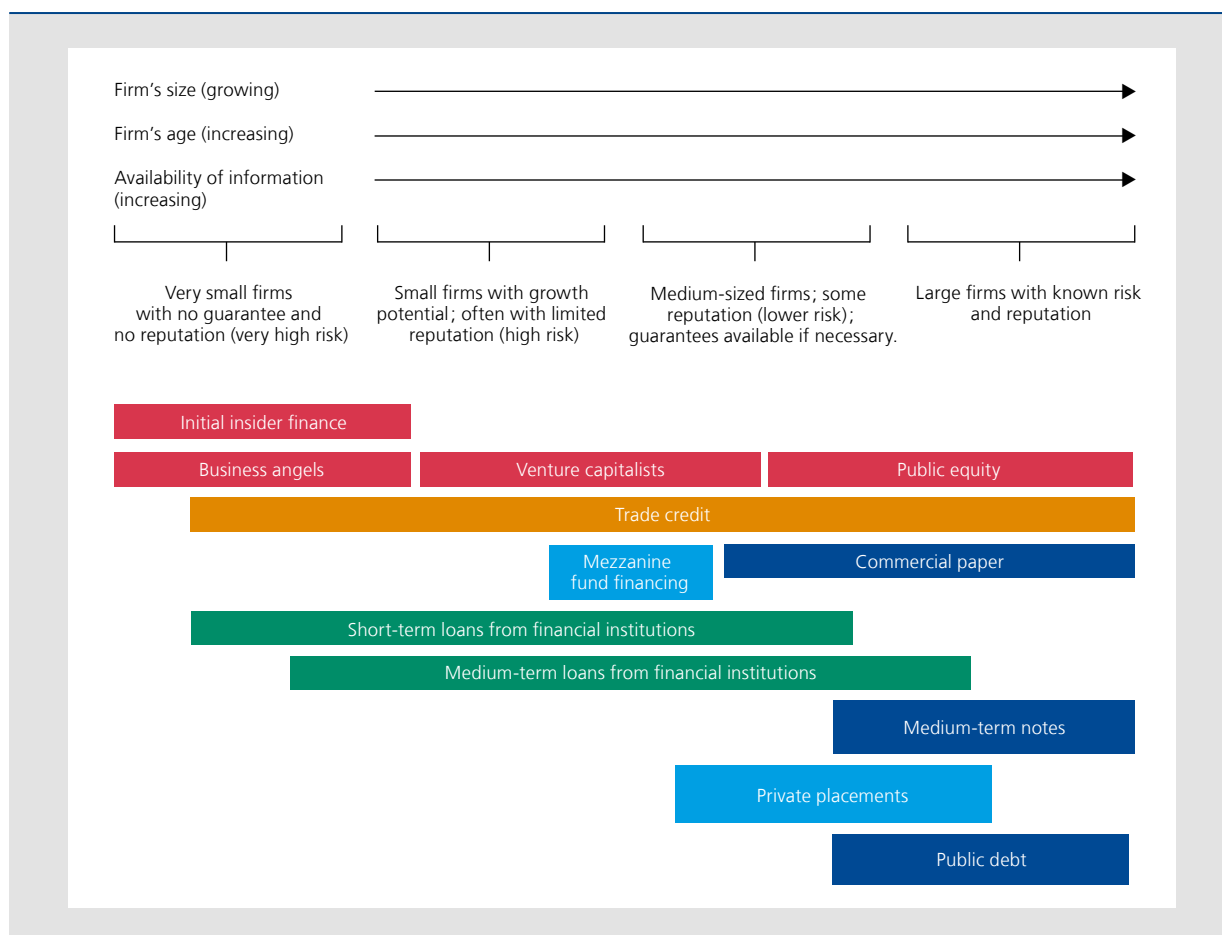
2.1.2 The financial growth cycle theory

Other factors may also affect a firm's preferred means of financing. One of the key factors is the stage of development, examined in the rest of the analysis according to the age or size of the business, and its growth (approximated by the increase in employment). To take this into account, it is necessary to use a different theoretical framework, namely the financial growth cycle theory. That is based on the financing sources available to firms as they grow, their reputation improves, and the information on them becomes less opaque (see chart 4). This paradigm therefore takes account of the whole life cycle of a business and encompasses its various stages of development. It postulates that the optimum capital structure varies according to the firm's life cycle. This model was developed by Berger and Udell (1998).

The smallest and youngest businesses, which experience great difficulty in convincing investors or lenders of their quality (owing to opaque information, insufficient assets to provide collateral, or a lack of credit references and credit history, etc.) tend to rely on initial finance provided by the entrepreneur himself, his family or his friends (Chavis *et al.*, 2011), trade credit and, in some cases, funds invested by business angels. In most cases, this concerns short-term financing, offering the lenders more flexibility for terminating the contracts in the event of doubts about the viability of the industrial project. The lack of transparency is greatest

CHART 4   LIFE CYCLE OF THE FIRM AND FINANCING SOURCES

Source: Adapted from Berger and Udell (1998).
This diagram gives a general idea of the important funding sources at the various stages of the financial growth cycle; however, the limits of each financing means should not be interpreted as absolute. For example, very large companies may still finance their activities via bank loans or private placements.

for small, young businesses, making lenders reluctant to grant them long-term financing. For that type of capital, SMEs can turn to operators with expertise in private equity.

As the business grows and its reputation increases, it begins to gain access to medium-term financing sources (shares and debt). At this stage, financing via equity obtained from venture capitalists may become an option, but in most cases the funds are supplied by banks or other types of financial intermediaries. In particular, fast-growing businesses whose internal resources are insufficient to fund their activities make proportionately greater use of external financing, though the type of financing will of course also depend on their age and size. They will also raise finance from a wider range of instruments than other firms, and will form a target group for venture capitalists, attracted by the prospect of healthy returns. As businesses grow older and expand, the accumulated retained earnings may also become a substantial source of funding (in particular, López-Gracia and Aybar-Arias (2000) show that the largest firms have a higher level of self-financing), while providing a performance guarantee for any lenders. Furthermore, if their profitability is increasing, firms have greater scope for internal financing. They can then replace long-term debt with self-financing, short-term debt and trade credit; that enables them to reduce their debt leverage and make their financing more flexible.

For the biggest firms which are more mature and have an established reputation in terms of credit history or other forms of financing, participation in the capital markets (shares and bonds) becomes an option. These firms also retain the option of using financing sources which are likewise accessible to younger firms (except for business angels and venture capitalists, who specialise in the early stages of a firm's development) and can therefore increase the diversity of their financing.

According to this typology, firms at a very early stage in their development (start-ups) therefore cannot generally resort to bank financing. Only when their business has been properly launched and they have attained a certain level of tangible assets can companies gain access to external borrowing, particularly bank loans. During their growth phase, firms may make successive use of business angels, private equity and bank loans or other funding.

Finally, other factors influencing the financing structure of firms, factors not directly mentioned in the two theories outlined above but often cited in the economic literature, are relevant variables. First, the sector in which a firm operates has a direct influence on the accessible finance. Capital-intensive sectors have more fixed assets which can be used as collateral to obtain long-term finance, such as bank loans or leasing. Conversely, sectors requiring substantial working capital will make more use of short-term financing and trade-related credit (Degryse *et al.*, 2012).

Next, it is appropriate to mention the special case of innovative firms which, for investors, are associated with a higher risk and a greater lack of transparent information; they therefore face tougher financing constraints. Furthermore, lending to such firms is also riskier in the absence of assets to be used as collateral. Recourse to external capital is therefore more expensive, and they are generally more likely to opt for self-financing. If they need external funding, they can apply to specialist operators such as venture capitalists or private equity investors, who are better able to manage the risks associated with information asymmetry and moral hazard (Cosh et al., 2009). Subsidised loans or loans backed by a government agency are also an option for them.

2.2 Empirical analysis : choice of financing means by stand-alone companies

The effects of these various determinants on the choice of financing means by Belgian firms were measured on the basis of an econometric analysis of the data available at the Central Balance Sheet Office. The methodology used for that purpose, based on the estimation of a "multinomial logit" model, is described in detail in the annex to this article. In essence, the approach adopted permits assessment of the degree to which a firm's particular characteristic may cause the firm to prefer a specific means of financing [1]. Various characteristics were taken into account in the analysis provided they could be quantified by means of the information available in the annual accounts. Some of the variables included in the model, namely the firms' age, size and growth, are indicators of their stage of development, while others, such as profitability, liquidity, solvency or the presence of government guarantees covering part of the existing debts, were included to take account of effects relating to financial health and certain specific financing needs. That applies, for example to the liquidity ratio, which may reflect the existence of a short-term funding need. Similarly, long-term funding needs are taken into account by means of dummy variables indicating whether, at a

[1] As in the previous section (see chart 3), this concerns the financing means by which the firm obtained the bulk of its funding in a given financial year.

TABLE 3   ESTIMATED EFFECTS OF THE VARIOUS FACTORS ON THE FINANCING MEANS USED BY STAND-ALONE COMPANIES

(relative risk ratios [1] in relation to the absence of finance, estimated by means of a multinomial logit model in the period 2007-2014)

	Internal financing	Trade credit	Short-term bank loan	Long-term bank loan	Non-bank loan	Capital contribution
Constant	4.269 [2]	2.018 [2]	0.521 [2]	0.262 [2]	0.129 [2]	0.088 [2]
Age	0.991 [2]	0.989 [2]	0.994 [2]	0.986 [2]	0.988 [2]	0.986 [2]
Size	1.247 [2]	1.368 [2]	1.429 [2]	1.403 [2]	1.382 [2]	1.425 [2]
Growth	1.311 [2]	1.330 [2]	1.189 [2]	1.422 [2]	1.317 [2]	1.320 [2]
Profitability	1.003 [2]	1.000	1.000	1.003 [2]	1.000	1.000
Liquidity	1.000	1.000	0.974 [2]	1.000	1.000	1.000
Solvency	1.000 [2]	1.000	1.000	1.000	1.000	1.001
Stock of fixed capital	1.277 [2]	1.190 [2]	1.685 [2]	4.027 [2]	3.835 [2]	1.331 [2]
Public guarantees	1.194 [2]	1.151 [2]	1.478 [2]	1.356 [2]	1.161	1.173
Fixed capital investments	2.215 [2]	2.563 [2]	1.923 [2]	20.640 [2]	7.166 [2]	3.365 [2]
Investments in knowledge capital	1.194 [2]	1.540 [2]	1.635 [2]	1.818 [2]	1.988 [2]	1.786 [2]

Source: NBB.
(1) A relative risk ratio measures the effect of a one-unit increase in an explanatory variable on the probability that a firm will use a particular financing means, expressed in relation to the probability that it will not raise finance, *ceteris paribus*. The more a relative risk ratio exceeds the other ratios in the same line in the table, the more likely it is that a "typical firm" will prefer the financing means associated with that ratio if the explanatory variable concerned increases, so long as it is greater than 1 (if the ratio is less than 1, the opposite applies; the firm will tend to abandon the financing means if the variable in question increases). For example, if a firm invests in fixed capital, that multiplies by 20.64 its chances of financing itself via a long-term bank loan, compared to those of not taking on new liabilities, and multiplies by 9.32 (or 20.64 divided by 2.215) the probability that it will use that same financing means compared to the chance of self-financing. The annex to this article gives more details on the econometric method used, the definition of the explanatory variables, and the way in which these ratios are calculated.
(2) Significant at the 1% level.

given moment, a firm is investing in fixed capital or knowledge capital (i.e. spending on research and development, purchases of patents, software, etc.). The presence of assets usable as collateral for negotiating a loan was assessed via the proportion of the stock of fixed capital (tangible fixed assets) in the total assets.

The detailed results of the econometric estimates are also shown in the annex. Table 3 above gives a simplified presentation of the results obtained for stand-alone companies. They are represented in the form of relative risk ratios, which measure the effect of the various explanatory variables on the main means of financing used by a 'typical firm'. Each of those ratios is interpreted in comparison with those relating to the same variable; the more a relative risk ratio exceeds the other ratios, the greater the likelihood that the firm will prefer the financing means with which that ratio is associated if the value of the variable in question increases.
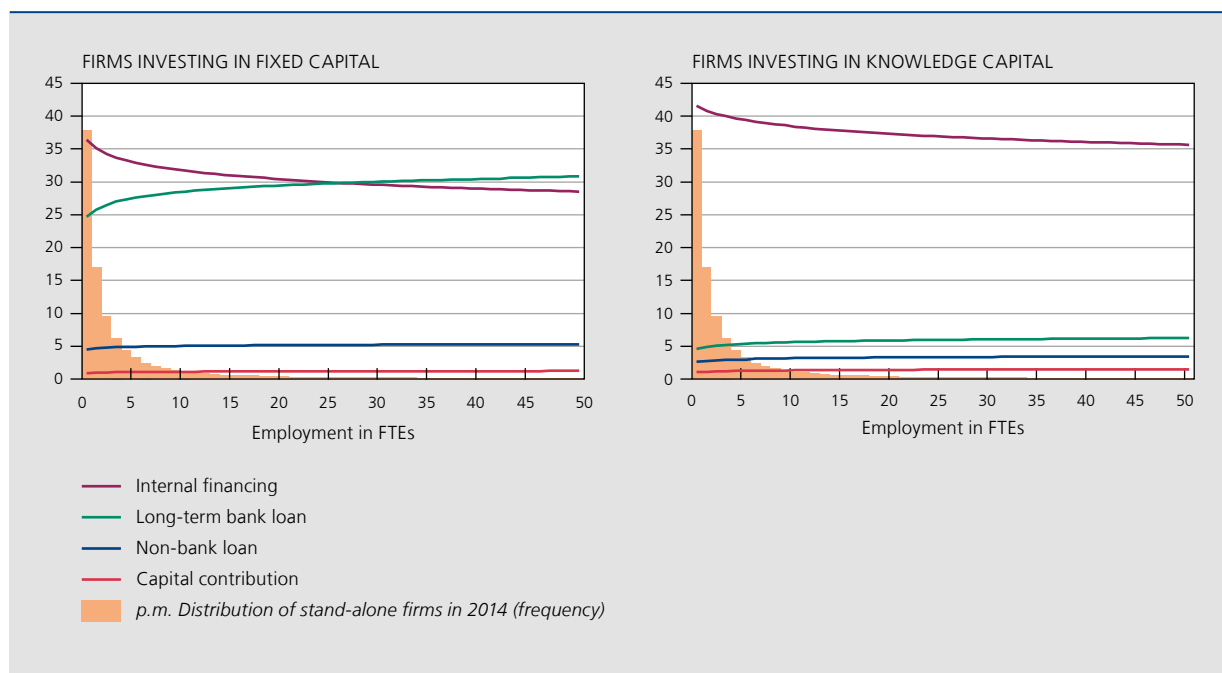
The estimates obtained for the model constants, which correspond to the preferences of a typical firm if all other potential determinants remain unchanged, confirm the predictions of the pecking order theory mentioned above, namely a very marked preference for internal financing and some reluctance to resort

to external financing, particularly funding in the form of capital contributions. Rather than the latter, firms generally prefer bank loans and, to a lesser degree, non-bank loans.

The empirical results also largely confirm the financial growth cycle theory. In particular, there is certainly a significant link between the size of stand-alone firms and the probability that they will resort to external financing sources, and more especially bank loans and capital contributions. However, when relatively large companies want to expand their production capacity by investing in fixed capital, they display a marked preference for the first of these two financing means. Nevertheless, access to bank loans is conditional upon a sufficiently sound financial position. A bank loan is more likely to be obtained by a profitable firm with a stock of fixed capital which it could, if appropriate, offer as collateral when negotiating a loan. The existence of public guarantees also makes it easier to obtain a bank loan.

The link between the firm's size and its preferred means of long-term financing in the specific case of companies investing in fixed capital is illustrated in the left-hand panel of chart 5, which shows in particular that smaller firms – which generally find it harder to obtain bank

CHART 5

CHART 5   PROBABILITY OF RECOURSE TO LONG-TERM FINANCING MEANS BY STAND-ALONE FIRMS, ACCORDING TO THEIR SIZE

(probability generated by the econometric model for a typical firm[1], unless otherwise stated)

FIRMS INVESTING IN FIXED CAPITAL

FIRMS INVESTING IN KNOWLEDGE CAPITAL

Employment in FTEs

Employment in FTEs

— Internal financing
— Long-term bank loan
— Non-bank loan
— Capital contribution
p.m. Distribution of stand-alone firms in 2014 (frequency)

Source : NBB (Central Balance Sheet Office and own calculations).
(1) The values of the model's explanatory variables other than employment are set at the median of the sample.

loans – more often resort to internal financing when making such investment. The probability that a firm will receive an injection of new capital – be it via private placements or by recourse to the financial markets – increases slightly as the firm grows ; that is in line with the financial growth cycle theory. However, the empirical results suggest that bank financing is by far the most popular external means of financing chosen by stand-alone companies, including large ones. Moreover, older firms which already have their production facilities in place and have accumulated profits reinvested throughout their existence, require less external financing than younger businesses.

Firms resort much less often to bank loans when investing in knowledge capital, e.g. when spending on research and development or acquiring existing patents (see right-hand panel in chart 5). For this type of investment, internal financing predominates. The results set out in table 3 also indicate a significant link between investments in knowledge capital and the likelihood that a firm will turn to a non-bank loan to raise finance ; that is consistent with the intuitive idea that, from the lender's point of view, innovative firms often present a riskier profile because of the greater uncertainty over their future profitability, and also

because intangible investments – such as research and development expenditure – cannot be used as collateral for a bank loan.

The difficulties that some entrepreneurs face in providing collateral sometimes lead them to borrow funds from friends or relatives. Those borrowings make up a very large proportion of the non-bank loans granted to young businesses. According to the data from a survey conducted in 2014 by FPS Economy, SMEs, Self-Employed and Energy (see table 4), 18.6 % of start-up companies questioned made use of this source of funding, compared to just 3.7 % of SMEs which had begun operating more than four years previously. In addition, 8.5 % of them stated that they had taken out a subordinated loan, i.e. twice as many as those receiving assistance from a business angel (4.1 % of firms polled). Only 1 % of start-up firms obtained funds in the form of venture capital, while the use of crowdfunding is still anecdotal. Overall, the data from this survey therefore also confirm that Belgian SMEs use non-bank loans more often than capital contributions.

To sum up, in the light of the statistics and econometric results presented above, recourse by stand-alone firms to non-bank financing instruments appears to be relatively

ORIGINS OF THE NON-BANK FINANCING OF SMEs

(in % of firms polled resorting to a financing instrument in the twelve months preceding the survey)

	Business start-ups[1]	Firms other than start-ups	
		Micro-enterprises[2]	SMEs[3]
None	34.0	63.9	49.0
Internal financing	9.3	16.5	24.2
Equity capital			
Capital put in by existing partners	35.1	8.1	5.2
Business angels	4.1	0.0	0.4
Venture capital	1.0	0.0	0.2
Crowdfunding	0.0	0.0	0.2
Debts			
Loans from friends or family	18.6	7.4	3.7
Advances by partners	5.2	7.7	6.1
Intra-group finance	1.0	0.4	10.4
Leasing	7.2	2.1	14.4
Subordinated loans	8.2	1.1	1.7
Trade credit			
Suppliers' credit	8.2	4.6	5.2
Factoring	0.0	0.0	3.3
Other	4.1	0.7	1.8
p.m. In % of firms obtaining a bank loan	*23.1*	*27.0*	*48.9*

Sources : FPS Economy, SMEs, Self-Employed and Energy (survey on the financing of SMEs in 2014, conducted by the SME Observatory) and own calculations.
(1) Firms active for less than four years.
(2) Firms with fewer than ten employees and a turnover of less than € 2 million.
(3) Firms with more than ten employees or a turnover of € 2 million or more.

marginal. That may be due largely to demand factors. On the one hand, bank loans certainly meet the needs of many firms, be it to top up their liquidity or increase their production capacity via investment in fixed capital. Also, bank financing allows entrepreneurs to retain control over their company. That aspect is certainly relevant in Belgium, where the economy comprises numerous small firms, often family businesses, the vast majority of which have fewer than ten employees.

## 3. The supply of finance in Belgium

Apart from the demand aspects mentioned in the previous section, other factors relating to supply could help to explain the low recourse to non-bank financing by Belgian firms. In particular, two of those factors could perhaps limit the supply of this type of finance within the economy. First, there could be a higher risk aversion on the part of the institutional sectors most likely to grant finance, such as households and specialist financial

institutions. Also, the availability of capital or loans accessible to firms from players other than banks depends on the volume of savings that those players succeed in channelling. Therefore, if household savings are channelled mainly through the banks, this can naturally affect the supply originating from other financing sources. Those two assumptions are examined below.

Survey data tend to refute the first assumption. According to the SAFE survey results shown in chart 6, only 16 % of the Belgian SMEs interested in finance other than a bank loan or trade credit stated that they had encountered total or partial refusal, or that they did not ask for credit for fear of being refused. That percentage is comparable to the average for the other euro area countries, and suggests that SMEs have readier access to alternative finance rather than short- and long-term bank loans. The reason for this relative ease of access could be that part of the funding in question concerns loans granted to entrepreneurs by family or friends (see above).

Trade credit

Credit line or bank overdraft

Bank loan

Other types of finance
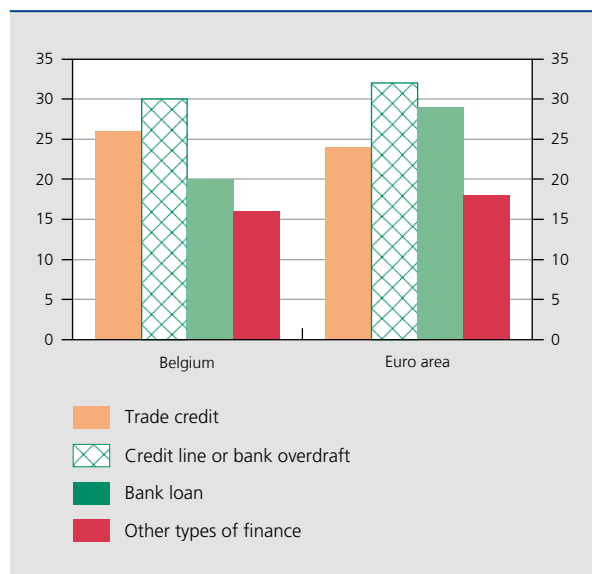
Source : SAFE Survey.
(1) Firms not applying for finance for fear of rejection, or applying for finance but
    being granted only a limited part of the amount requested, or applying but
    refusing because the cost was too high, or having had their application rejected.

Cash and deposits

Debt securities

Loans

Shares and other equity

Investment fund units

Insurance, pension funds
and standardised guarantees

Other

Total

Source : EC.

As regards the second assumption, the preponderant recourse to bank loans, particularly in comparison with market instruments, is actually attributable in part to the fact that credit institutions collect a very large proportion of Belgian households' savings. As is evident from chart 7, Belgian households overall generate a larger volume of savings – as a percentage of GDP – than the figure for most other European Union countries. However, they deposit a singularly large proportion of their savings in bank accounts, in contrast to the situation in many other European countries, where households place a bigger proportion of their savings in investment funds or pension funds.

The volume of the funds thus introduced into the banking system is naturally reflected in the volume of lending to resident firms by credit institutions. In the past five years, leaving aside cross-shareholdings and inter-company loans, as well as other commitments contracted with non-residents, bank loans have been the main financing vehicle for non-financial corporations, after capital contributions from households, as is evident from chart 8. Of course, their own capital that business founders put in is their primary source of finance when establishing the firm. The amounts of household loans to businesses, whether they come from the partners themselves or from other individuals,
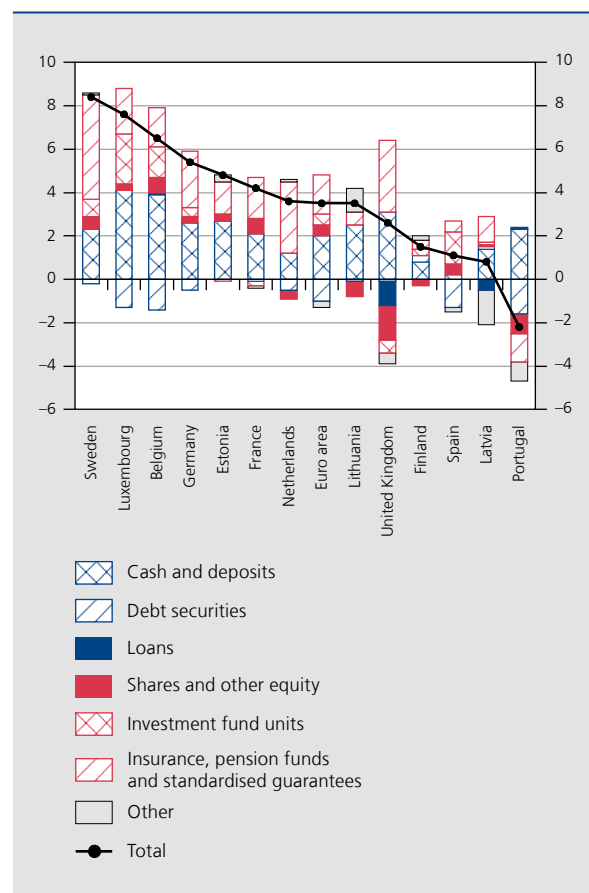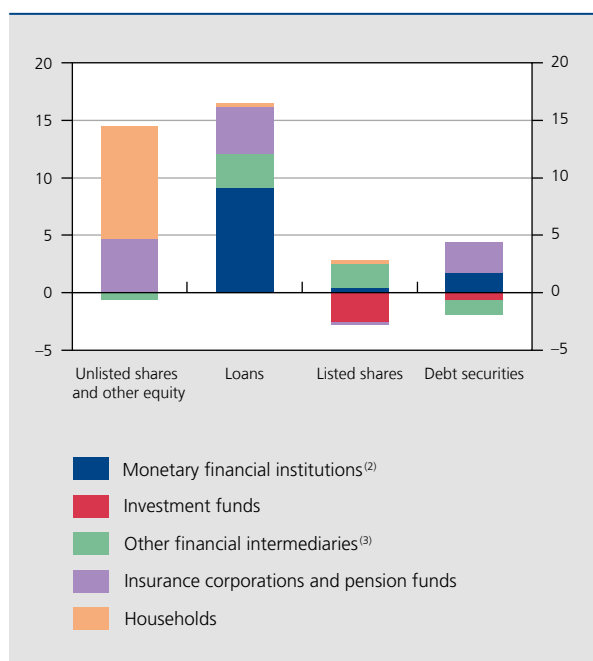
e.g. via the "win-win" loan scheme set up in the Flemish Region, are much smaller.

The funds raised by Belgian firms by means of market instruments, namely listed shares and debt securities, were also fairly limited over the past five years, one reason being that Belgian investment funds reduced the amounts invested in resident companies.

Conversely, it is worth noting the increasing involvement of insurers and pension funds in the financing of Belgian firms. That trend, which began in 2011 (see chart 9), is probably to do with a reallocation of part of their assets following the steep decline in interest rates, which had a significant impact on the yields from their traditional investment in government or corporate bonds. In these circumstances, insurers stepped up their investment in the form of shares and other equity in non-financial corporations, and their lending to those companies. They thus contributed to

NEW FINANCIAL LIABILITIES CONTRACTED BY
BELGIAN NON-FINANCIAL CORPORATIONS WITH
OTHER PRIVATE DOMESTIC SECTORS[1]

(net transactions over the period 2011-2015, in € billion)

LIABILITIES OF NON-FINANCIAL CORPORATIONS
TOWARDS NON-BANK FINANCIAL INSTITUTIONS

(outstanding amount in € billion)

Monetary financial institutions[2]

Investment funds

Other financial intermediaries[3]

Insurance corporations and pension funds

Households

Investments in unlisted shares and other equity
by insurance corporations and pension funds

Investments in unlisted shares and other equity
by other financial intermediaries[1]

Loans granted by insurance corporations
and pension funds

Source : NBB (financial accounts).
(1) "Other financial intermediaries" include security and derivative dealers, specialist
financial corporations (sicafis, pricafs, and private equity and venture capital
companies), financial institutions (other than banks) engaged in lending, and
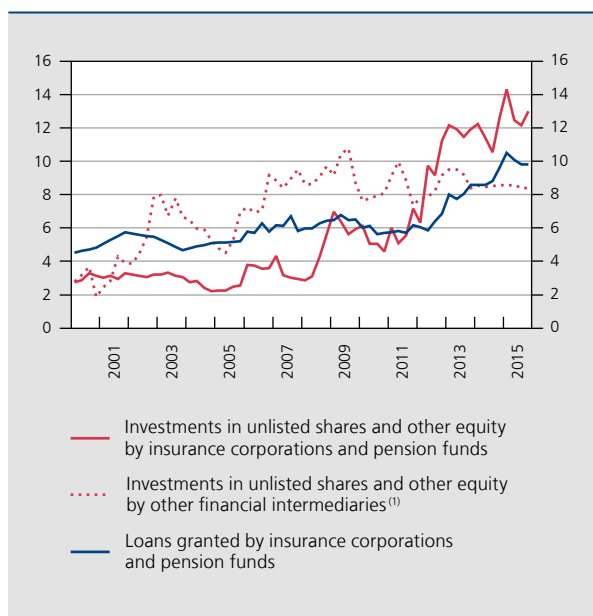miscellaneous investment companies.

(1) The data in this chart exclude transactions between non-financial corporations
and funds originating from captive financial institutions and money lenders, the
general government and the rest of the world.
(2) Including financial vehicle corporations engaged in securitisation transactions.
(3) "Other financial intermediaries" include security and derivative dealers, specialist
financial corporations (sicafis, pricafs, and private equity and venture capital
companies), financial institutions (other than banks) engaged in lending, and
miscellaneous investment companies.

the overall expansion of non-bank lending to Belgian firms. Although still marginal in comparison with the outstanding amount of bank loans, the growing involvement of insurers in the financing of the real economy contrasts with the stagnation of investment in shares and other equity by other financial intermediaries, such as private equity and venture capital companies, and other types of investment institution such as pricafs[1].

4. Conclusion

In general, non-financial corporations most commonly finance themselves on the basis of the resources that they succeed in generating via their operating surplus. Apart from the higher costs of external funding – due partly to information asymmetry – this preference is probably attributable to the business founders' desire to retain control. If they need additional funds, e.g. in the event of a liquidity shortage or if they need to undertake major

investments, firms can resort to various external financing sources.

The instruments actually used depend not only on their respective costs, determined by market conditions, but also on the nature of the needs and the firms' own characteristics. In particular, firms forming part of a group, be they parent companies or subsidiaries, have various facilities at their disposal. In particular, some of them have access to liquidity reserves common to their group, which can help them to meet their need for working capital. If appropriate, capital injections can also be arranged via cross shareholdings, to enable them to finance their activities in the long term.

However, most Belgian firms are not part of a group and therefore do not have such financing facilities. Consequently, they normally resort to bank loans if their internal resources are no longer sufficient to meet their working capital needs, or in order to invest in fixed capital. Bank loans are thus a crucial factor in the development of production capacity, and hence in the expansion of the

(1) Pricafs are collective investment institutions intended to channel household
savings into investment in unlisted companies.

economy's growth potential. Nevertheless, their role in the financing of intangible fixed investments remains minor.

The empirical results presented in this article also suggest that innovative firms may exhibit some interest in non-bank loans, such as subordinated loans granted by individuals or by specialist financial institutions. Yet, the financing of these businesses, which are often young and not connected with a group, is not risk-free. That is probably why many entrepreneurs depend on funds lent to them by friends or family.

Bank financing is also strongly supported by the structure of Belgian household savings. In recent years, the bulk of those savings has been placed in sight deposits or savings accounts, i.e. on the liabilities side of the balance sheet of monetary financial institutions. Consequently, it is mainly those institutions that channel the funding resources generated by Belgians' savings into productive investment. That may favour the allocation of resources to projects which are relatively safe but perhaps less innovative, as the banks take account of the risk factor in their lending policy.

Annex: Econometric analysis of the factors influencing the financing means of firms in Belgium

Econometric model

The effects of the characteristics of Belgian firms on the use that they make of the various financing means were measured with the aid of a multinomial logit model. This is a discrete choice model which comprises a number of equations, each having as its dependent variable the probability that an individual – or in this case a firm – will opt for one of the choices offered. As in any econometric model, that dependent variable may be influenced by a number of explanatory variables which are the same for each equation.

In this case, it is implicitly assumed that the benefits that a firm i gains from the use of a means of financing j in a year t are determined by a linear function of its own characteristics, incorporated in a vector $X_{i,t} = \left[1, x_{i,t}^{(1)}, x_{i,t}^{(2)}, \dots, x_{i,t}^{(l)}, \dots, x_{i,t}^{(L)} \right]'$, and by the macrofinancial environment in which it operates. The latter is approached by a series of dummy variables (denoted D_t) which may among other things absorb cyclical effects and fluctuations in financing costs. Taking account of these assumptions, the benefits relating to the choice of financing means j can be defined by the equation:

$$\prod_{i,j,t} = \beta_j' X_{i,t} + \gamma_j' D_t + \varepsilon_{i,j,t}$$

in which $j = \{0,1,\dots,J\}$ is one of the J financing means considered, $j = 0$ corresponding to the absence of recourse to new financing during a given year. The potential benefits to the firm of using a particular means of financing are not understood in the purely financial sense of the term. They may also include other aspects, such as those relating to retention of control over the business by the partners (control may be retained with a bank loan or may be partly affected by capital injections from third parties), or the way in which a financing instrument can meet certain specific needs.

It is also assumed that a firm prefers financing means j to financing means k if the benefits gained from the first of these options exceed the benefits of the second, i.e. if $\Pi_{i,j,t} > \Pi_{i,k,t}$. The probability that firm i will choose financing means j is therefore

$$Prob\ (Y_{i,t} = j) = Prob\ (\textstyle\prod_{i,j,t} > \prod_{i,k,t})$$

Assuming that the error terms $(\varepsilon_{(i,j,t)})$ follow a Weibull distribution, and after normalising the coefficients relating to the absence of financing to 0 $(\beta_0 = 0)$, that probability can be stated as

$$Prob\ (Y_{i,t} = j) = \frac{e^{\beta_j' X_{i,t} + \gamma_j' D_t}}{1 + \sum_{k=1}^{J} e^{\beta_k' X_{i,t} + \gamma_k' D_t}}$$

Thus specified, the model – which comprises a total of J equations – can be estimated via the maximum likelihood method.

The coefficients of this model are not interpreted as elasticities, as in the case of, for instance, a standard linear model estimated by the least squares method. Nor do they permit any economic interpretation, when considered individually. On the other hand, by comparing the coefficients relating to the same variable in different equations it is possible to determine how the variable in question steers a firm's choice towards a particular financing mean. That can be demonstrated by returning to the model described above, which implies that

$$ln \left[\frac{Prob\ (Y_{i,t} = j)}{Prob\ (Y_{i,t} = k)} \right] = (\beta_j' - \beta_k') X_{i,t} + (\gamma_j' - \gamma_k') D_t = \sum_{l=1}^{L} (\beta_j^{(l)} - \beta_k^{(l)}) x_{i,t}^{(l)} + (\gamma_j^{(t)} - \gamma_k^{(t)})$$

which, converted into logarithms, gives

$$ln\left[\frac{Prob\ (Y_{i,t}=j)}{Prob\ (Y_{i,t}=k)}\right] = (\beta_j' - \beta_k')\ X_{i,t} + (\gamma_j' - \gamma_k')\ D_t = \sum_{l=1}^{L} (\beta_j^{(l)} - \beta_k^{(l)})\ x_{i,t}^{(l)} + (\gamma_j^{(t)} - \gamma_k^{(t)})$$

This equation shows that the ratio of the probability of choice j compared to that of choice k is a positive function of the difference between the coefficients $\beta_j^{(l)}$ and $\beta_k^{(l)}$. Therefore, given a variable $x_{i,t}^{(l)}$ the firm will tend to choose financing means j rather than financing means k if $\beta_j^{(l)} > \beta_k^{(l)}$.

Another way of assessing the impact of the model's different variables on the financing choices of firms involves calculating relative risk ratios. A relative risk ratio, which measures the effect of a one-unit increase in a particular variable on the relative probability of choice j compared to choice k, is defined as follows:

$$e^{(\beta_j^{(l)} - \beta_k^{(l)})} = \frac{e^{\beta_j^{(l)}}}{e^{\beta_k^{(l)}}}$$

This ratio means that, ceteris paribus, a firm will be on average $e^{\beta_j^{(l)}} / e^{\beta_k^{(l)}}$ times more likely to choose j rather than k if the variable $x_{i,t}^{(l)}$ increases by one unit. If the probabilities are expressed in relation to the reference choice, in this case the probability that the firm does not raise finance, the denominator is equal to 1 (since $\beta_0^{(l)} = 0$), and the relative risk ratio is therefore simply $e^{\beta_j^{(l)}}$.

Definition of the variables

Since the model's dependent variable can only take one value per observation, it is defined on the basis of the main means of financing used by each firm during the same year. This means that if a firm uses more than one financing means during the same financial year, the financing means used to define the value of the model's dependent variable $(Y_{i,t})$ is the one corresponding to the largest amount. The amounts relating to each type of financing are determined by calculating the first differences between the values of the corresponding items on the liabilities side of the balance sheet in two successive financial years.

Altogether, the dependent variable comprises seven different options, namely internal financing (which corresponds to the reallocation of business profits to the capital, either as reserves or as retained earnings), trade credit, short-term bank loans, long-term bank loans [1], non-bank loans [2] (which include bond issues and subordinated loans, funds advanced by partners and any funds received from other persons), capital contributions, and finally, the absence of financing, which in a way is the default option $(j=0)$. It is assumed that a firm does not raise finance during a given year if the balance sheet liabilities item corresponding to the said financing means does not increase in relation to the previous year.

The list of explanatory variables included in the model is shown in table A.1 below. The variables were selected to permit the optimum approach to the various factors which could influence a firm's choice of financing from among those listed in the second part of this article. Those variables therefore include the firm's age, i.e. the number of years since it began operating, its size measured by the number of employees in FTEs, and its growth, assessed according to the increase in the number of its employees. Its profitability is determined on the basis of the return on equity, while the liquidity ratio in the narrow sense and the ratio between the equity and the balance sheet total are used to take account of its financial health. The capital intensity, measured on the basis of the ratio between the tangible fixed assets and the total assets, reflects a long-term financing need and the availability of assets which could, if necessary, be used as collateral for negotiating a loan. The existence of any public guarantees covering existing debts may also make it easier to obtain a loan, and that is therefore also taken into account by means of a dummy variable. Two other dummy variables are included in the model's specification: the first to indicate fixed capital investments during a year, identified by an increase in the tangible fixed assets, and the second to indicate whether the firm has invested in its knowledge capital. That is defined by the intangible fixed assets, which include capitalisation of research and development expenditure, patents and software acquired by the firm, and goodwill. Except for the dummy variables relating to investments in fixed capital

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(1) Long-term bank loans also include leasing debts which, in the annual accounts drawn up in the abbreviated format, cannot be separated from debts towards credit institutions.
(2) Short-term and long-term non-bank loans were grouped in a single category. Too few stand-alone companies use short-term non-bank loans to permit the estimation of a separate equation for this financing instrument in the multinomial logit model.

and knowledge capital and the age of the firm, the explanatory variables are lagged by one period in order to prevent any endogeneity problems.

EXPLANATORY VARIABLES TAKEN INTO ACCOUNT IN THE "MULTINOMIAL LOGIT" MODEL

Explanatory variable	Definition	Included with a lag
Age	Number of years since the firm began operating	No
Size	Logarithm of the number of employees in FTEs plus one unit	Yes
Growth	Logarithmic difference in the number of employees in FTEs compared to the previous year	Yes
Profitability	Return on equity after tax (profits for the year divided by equity)	Yes
Liquidity	Liquidity in the narrow sense (sum of claims at up to one year, current investments and cash, divided by debts at up to one year)	Yes
Solvency	Ratio between equity and the balance sheet total	Yes
Stock of fixed capital	Ratio between the tangible fixed assets and the balance sheet total	Yes
Public guarantees	Dummy variable indicating whether part of the firm's debts is covered by a Belgian government guarantee	Yes
Investment in fixed capital	Dummy variable indicating whether the firm has invested in tangible fixed assets	No
Investment in knowledge capital	Dummy variable indicating whether the firm has invested in intangible fixed assets	No

Source : NBB.

Sample and estimation results

The model parameters were estimated separately for the three categories of firms considered in this article, namely parent companies, subsidiaries, and stand-alone companies. In order to permit inclusion of the variables relating to the firms' size and growth, which are both approached on the basis of the number of employees expressed as FTEs, the regressions were done on a constant sample of firms with at least one employee during the period considered, namely 2005-2014. That restriction therefore excludes firms which had no significant economic activity during that period, and those which only existed for a short time. The calculation of the growth of employment and the lag imposed on that variable cause the loss of two years from the period originally covered by the data, thus limiting the estimation period to 2007-2014. Finally, as is also the case for the statistics described in the article, firms not included in the usual definition of the non-financial corporations sector, notably those active in financial services, government and education, were not included in the population studied.

In the end, following selection on the basis of these criteria, the sample of parent companies contains 5 503 firms, the sample of subsidiaries comprises 19 345 firms and that of stand-alone companies 74 283. The parameters estimated for the three models, each corresponding to one of these categories of firms, are set out in table A.2. Those parameters are expressed in the form of relative risk ratios in relation to the probability of non-financing.

(maximum likelihood estimates for the period 2007-2014; relative risk ratios in relation to the absence of financing)

	Internal financing	Trade credit	Short-term bank loan	Long-term bank loan	Non-bank loan	Capital contribution
	Dependent variable: financing means used by parent companies					
Constant	7.461***	2.562***	0.729***	0.605***	0.373***	0.283***
Age	0.993***	0.991***	0.998	0.988***	0.997	0.986***
Size	1.044***	1.174***	1.194***	1.022	1.247***	1.179***
Growth	1.358***	1.293***	1.275***	1.424***	1.081	1.432***
Profitability	0.999	1.001	1.001	0.999	1.077***	0.996
Liquidity	1.000	1.000	0.994***	0.987***	0.990***	1.000
Solvency	1.000	1.000	1.000	1.002	0.993***	1.006
Stock of fixed capital	1.210**	1.121	2.354***	5.276***	2.034***	1.685***
Public guarantees	0.969	0.946	1.036	1.292	0.956	1.331
Investments in fixed capital	1.941***	2.206***	2.279***	11.23***	3.197***	3.026***
Investments in knowledge capital	1.169*	1.551***	1.477***	1.763***	1.659***	1.809***
Dummy variables						
2008	0.752***	0.796**	0.866	0.798***	0.870	0.787*
2009	0.639***	0.690***	0.757***	0.683***	0.799**	0.660***
2010	0.663***	0.831**	0.798**	0.629***	0.785**	0.696**
2011	0.65***	0.879	0.763***	0.645***	0.728***	0.772*
2012	0.718***	0.806**	0.807**	0.712***	0.745**	0.726**
2013	0.571***	0.742***	0.729***	0.629***	0.742***	2.451***
2014	0.621***	0.720***	0.684***	0.612***	0.844	2.509***

Number of observations: 43 976

Pseudo-R^2: 0,0434

	Internal financing	Trade credit	Short-term bank loan	Long-term bank loan	Non-bank loan	Capital contribution
	Dependent variable: financing means used by subsidiaries					
Constant	5.162***	3.035***	0.615***	0.316***	0.180***	0.154***
Age	0.998***	0.995***	1.000	0.995***	0.996***	0.989***
Size	1.087***	1.114***	1.159***	1.057***	1.350***	1.310***
Growth	1.321***	1.432***	1.467***	1.471***	1.134**	1.424***
Profitability	1.037***	1.037***	0.999	1.018	1.001	0.998*
Liquidity	1.000	1.000	0.972***	1.000	1.000	1.000
Solvency	1.000	1.000	1.003	1.008	1.000	1.000
Stock of fixed capital	1.343***	1.161***	1.835***	6.391***	3.611***	1.753***
Public guarantees	1.353***	1.568***	2.068***	2.057***	1.422**	2.156***
Investments in fixed capital	1.827***	2.302***	2.032***	12.34***	3.125***	2.660***
Investments in knowledge capital	1.112***	1.421***	1.706***	1.630***	1.835***	2.529***
Dummy variables						
2008	0.770***	0.716***	0.947	0.811***	0.855**	0.686***
2009	0.557***	0.505***	0.648***	0.605***	0.643***	0.581***
2010	0.669***	0.797***	0.800***	0.663***	0.690***	0.668***
2011	0.627***	0.753***	0.787***	0.659***	0.746***	0.622***
2012	0.550***	0.588***	0.708***	0.593***	0.671***	0.576***
2013	0.531***	0.601***	0.668***	0.603***	0.609***	0.813***
2014	0.570***	0.625***	0.684***	0.611***	0.655***	0.719***

Number of observations: 154 465

Pseudo-R^2: 0,0367

Source: NBB.
(1) Note: the signs "*", "**" and "***" indicate a significance at the 10, 5 and 1% levels respectively.

(maximum likelihood estimates for the period 2007-2014 ; relative risk ratios in relation to the absence of financing)

	Internal financing	Trade credit	Short-term bank loan	Long-term bank loan	Non-bank loan	Capital contribution
	Dependent variable : financing means used by stand-alone companies					
Constant	4.269***	2.018***	0.521***	0.262***	0.129***	0.088***
Age	0.991***	0.989***	0.994***	0.986***	0.988***	0.986***
Size	1.247***	1.368***	1.429***	1.403***	1.382***	1.425***
Growth	1.311***	1.330***	1.189***	1.422***	1.317***	1.320***
Profitability	1.003***	1.000	1.000	1.003***	1.000	1.000
Liquidity	1.000	1.000	0.974***	1.000*	1.000	1.000
Solvency	1.000***	1.000	1.000	1.000*	1.000	1.001
Stock of fixed capital	1.277***	1.190***	1.685***	4.027***	3.835***	1.331***
Public guarantees	1.194***	1.151***	1.478***	1.356***	1.161**	1.173*
Investments in fixed capital	2.215***	2.563***	1.923***	20.64***	7.166***	3.365***
Investments in knowledge capital	1.194***	1.540***	1.635***	1.818***	1.988***	1.786***
Dummy variables						
2008	0.834***	0.885***	1.014	0.893***	0.910***	0.792***
2009	0.708***	0.750***	0.879***	0.720***	0.738***	0.711***
2010	0.757***	0.907***	0.893***	0.761***	0.799***	0.689***
2011	0.715***	0.933***	0.837***	0.740***	0.738***	0.709***
2012	0.725***	0.758***	0.839***	0.666***	0.681***	0.575***
2013	0.589***	0.743***	0.760***	0.595***	0.626***	5.286***
2014	0.709***	0.756***	0.744***	0.640***	0.678***	4.650***

Number of observations : 592 723

Pseudo-R² : 0,0584

Source : NBB.
(1) Note : the signs "*", "**" and "***" indicate a significance at the 10, 5 and 1 % levels respectively.

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