Intragroup Debt, Intragroup Guarantees, and the Capital Structure of Belgian Firms

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Ilse Verschueren[a] and Marc Deloof[b]‡

[a] Vakgroep Micro-economie, Free University of Brussels (VUB), Pleinlaan 2, 1050 Brussels, BELGIUM; E-mail: Ilse.Verschueren@vub.ac.be; Tel: +32-2-629 21 93; Fax: +32-2-629 22 82

[b] Vakgroep Bedrijfsfinanciering, University of Ghent, Hoveniersberg 24, 9000 Ghent, BELGIUM; E-mail: Marc.Deloof@rug.ac.be; Tel: +32-9-264 35 08; Fax: +32-9-264 35 77

Abstract

We hypothesize that the lower costs of asymmetric information and financial distress and the potentially higher tax benefits associated with intragroup debt will cause firms with access to such funds to have higher leverage. The presence of intragroup debt could worsen the relations between the firm and non-group creditors, resulting in lower *non-group* debt levels. Intragroup guarantees could *improve* these relationships and thus lead to higher debt levels. Belgian firms provide an interesting case for research on this relationship, as internal capital markets play an important role in their financing. Our empirical analysis confirms these hypotheses.

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‡ Ilse Verschueren is Research Assistant of the Fund for Scientific Research–Flanders at the Free University of Brussels (VUB). Marc Deloof is Assistant Professor at the University of Ghent and Post-Doctoral Researcher of the Fund for Scientific Research-Flanders at the Free University of Brussels (VUB). We are grateful to Stephan Ermens, Marc Jegers, Sophie Manigart and Kurt Van der Voorde for helpful comments and suggestions. We also thank seminar participants at the University of Antwerp (UFSIA), the 1999 meeting of the European Financial Management Association, the 1999 meeting of the Belgian Financial Research Forum and the 1999 meeting of the Flemish Economic Association for their comments. The usual disclaimer applies.

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Modigliani and Miller's (MM) famous 1958 article launched an overwhelming amount of research on capital structure. Taxes, costs of financial distress, agency conflicts, governance problems, asymmetric information, interactions between real and financial decisions have been added to their so-called perfect world, in ever so many attempts to explain why capital structure choice *does* seem to matter[1]. Over the years, researchers have grown convinced that these imperfections not only influence the debt/equity ratio, but also the debt characteristics (e.g. Barclay and Smith (1995a, b), Easterwood and Kadapakkam (1991), Johnson (1998)). It is claimed, e.g., that bank debt leads to better monitoring than public debt.

Most capital structure theories analyse the financing decisions of firms with access to well developed capital markets. Belgian firms, however, are seldom listed, and corporate bond and loan markets hardly exist. Intragroup loans, on the other hand, are common practice. In November 1995, total stock market capitalisation of Belgian firms was only 44% of G.D.P., as opposed to 93% for the U.S. and 130% for the U.K. Corporate groupings and holding companies, acting as financial intermediaries, are important substitutes for the poorly developed external capital markets. Renneboog (1997) finds that 40% of the 155 firms listed on the Brussels stock exchange in 1994 were holding companies. About one third of the shares of listed firms are directly owned by holding companies[2]. According to the National Bank of Belgium, in 1995 the book value of total assets of all Belgian non-financial firms was 14,684 billion Belgian Francs (BEF)[3], of which 14.4% (or 2,116 billion BEF) was invested in participating interests in affiliated firms and other firms linked by participating interests and 4.8% (or 710 billion BEF) was invested in loans to these firms. *Affiliated firms* of a firm are (a) the firms which control the firm, (b) the firms which are controlled by the firm, (c) the firms which form a consortium with the firm, and (d) the firms which, to the knowledge of management, are controlled by the firms referred to in (a), (b) and (c). Firms *linked by participating interests* are (a) the firms in which the firm or its subsidiaries have a participating interest, (b) the firms which, to the knowledge of management,

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[1] Harris and Raviv (1991) give an overview of the most prominent theories, except for the trade-off theory. For a discussion of the latter theory, see e.g. Bradley et al. (1984).

[2] Families and industrial firms are the other main shareholders. The figures of Renneboog (1997) are based on the notifications of shareholdings that equal or exceed 5% of the voting rights, as required by the Belgian Ownership Disclosure Law that was introduced in 1989.

[3] 1 US Dollar is worth approximately 35 BEF, 1 Euro is worth 40.3399 BEF.

have a direct or indirect participating interest in the firm and (c) the firms which, to the knowledge of management, are subsidiaries of firms mentioned under (b). Basically, the possession of rights representing one tenth of the capital or of a particular category of shares of a firm is considered as a participating interest[4]. In 1990, for the average large non-financial Belgian firm loans by affiliated firms and firms linked by participating interests were 23% of total LT-debt (Deloof, 1998)[5].

The impact of these loans on e.g. agency problems between owners and lenders may be quite different from the impact of either bank or public debt. If this is the case, the access to an internal capital market may affect corporate debt policy in several ways. First, firms with access to intragroup debt may opt for a different overall debt level. Such firms could have higher debt levels, if attracting intragroup debt is associated with lower costs of asymmetric information than attracting bank debt, and if asymmetric information induces firms without access to intragroup debt to borrow less than they would in the absence of asymmetric information. Second, intragroup debt may affect the amount of non-group debt, either because intragroup finance reduces the need for external debt, either because intragroup debt alters the relationships with other creditors, e.g. by weakening their bargaining position or increasing the possibility that they will not be paid in full. However, belonging to a corporate group does not necessarily worsen the relations between the firm and its non-group creditors, as other group members could support the firm by guaranteeing its liabilities and commitments.

Internal capital markets may also alter group members' financial policy because of mere fiscal reasons. The Belgian tax legislation may stimulate the redistribution of excess funds through intragroup loans and *multinational* groups can minimize tax payments by financing their Belgian investments through one of the recognized co-ordination centres. This high(er) tax advantage associated with intragroup finance may induce firms to use intragroup debt rather than bank debt. There are no direct tax advantages associated with intragroup guarantees. However, if the trade-off theory of capital structure choice is relevant, intragroup guarantees may lower costs of financial distress and thus raise the optimal debt ratio. Moreover, corporate groups have more efficient ways of reducing tax payments.

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[4] To this there are some exceptions, which can be found in the Belgian Royal Decree of 8th October 1976.

[5] This figure is based on a sample of 947 firms that were among the 2000 largest non-financial firms during the 1980's.

In this paper, we analyse whether Belgian firms with access to an internal capital market have a different financing behaviour. We concentrate on three aspects: first, do firms with access to intragroup finance have higher overall debt levels, second, does the presence of intragroup debt influence the use of non-group debt, and third, do firms that are able to have some of their liabilities secured by other group members have higher debt levels. Using a sample of 1083 large non-financial Belgian firms, we find that the presence of intragroup debt is indeed associated with more overall borrowing and with less non-group borrowing, and that intragroup guarantees are associated with higher debt levels. To our knowledge, this paper provides the first study of the impact of intragroup financing on the capital structure of firms.

The remainder of the paper is organized as follows. The next section is dedicated to the impact of intragroup debt on corporate financial decisions. In section three we describe our sample and variable definitions. The results of our empirical analysis are discussed in section four, after which section five concludes.

I. Capital structure and intragroup debt

A. Introduction

Over forty years of post-MM research on capital structure have yielded several theories on the subject. A large review of these is beyond the scope of this paper, but a brief overview may be useful (for an extensive review, see Harris and Raviv (1991)). According to the trade-off theory, the tax advantage of debt will be traded off against the costs of financial distress. This trade-off results in an optimal capital structure. Once the optimal capital structure is reached, the (tax) advantage of additional debt is offset by the increase in the cost of financial distress. Firms for which the tax advantage is lower (e.g. firms with non-debt tax shields) and firms with higher costs of financial distress (e.g. firms with more volatile earnings) will have lower leverage (see e.g. DeAngelo and Masulis (1980)).

As debt financing causes monitoring by lenders and reduces the free cash flow, debt can be used as an instrument to align the interests of managers and shareholders (Jensen and Meckling (1976), Jensen (1986)). However, debt financing may also cause conflicts of interests between shareholders and creditors, which could e.g. lead to suboptimal investment policies (see e.g.

Smith and Warner (1977), Myers (1977), Stultz (1990)). A well-chosen mix of debt and equity financing minimizes total agency costs, and maximizes firm value.

Informational asymmetries may influence a firm's choice of financial structure in several ways. First, a firm could use its financing decisions as a signalling device: only firms with good prospects can survive with a high debt burden (Ross (1977)). On the other hand, when managers have superior information that they cannot share, investors' suspicions may cause the firm to lose valuable investment opportunities. Firms may try to circumvent this loss by following a financial pecking order (Myers and Majluf (1984)).

Most of these theories analyse the financing decisions of firms with access to well developed capital markets. In that case, a firm can combine common equity, preferred stock, public debt and private debt to obtain its preferred capital structure. In Belgium, as in many other continental European countries, capital markets are relatively underdeveloped and the main source of long-term external financing is bank debt. Intragroup loans also play a prominent role.

Intragroup loans that have not been granted by a financial institution could come from two alternative sources. Either a holding company (or any other group member) could use its reputation to attract funds on the capital markets and then redistribute these funds among other group members, or internal cash surpluses could be redirected between different entities of the group through intercompany loans and cross participations, without recourse to the market. In both cases, an internal capital market within the group is created.

B. Asymmetric information, intragroup debt and leverage

According to Gertner, Scharfstein and Stein (1994), by borrowing on an internal capital market, a business unit in need of external funds can avoid agency costs associated with external bank loans. They point out that in an internal capital market, corporate headquarters own the business units to which they allocate capital (at least partially), while an external bank does not own the firms to which it lends. In an internal capital market, the residual control over the use of the firm's assets resides with the capital supplier, which is not the case when an external bank provides capital. Because of this, the internal provider of capital will get more of the gains from

monitoring[6]. An internal capital market will therefore generate more monitoring than bank lending, and there will be a better flow of information between users and providers of capital. Moreover, intragroup debt will raise expected bankruptcy costs less than bank debt. Indeed, the probability of inefficient liquidation is lower when intragroup debt is used, because there are less owner-creditor conflicts. Furthermore, if the group consists of related businesses, assets could be redeployed more efficiently (Gertner, Gibbons, and Scharfstein (1994)).

If financing constraints arise from asymmetric information between informed firm insiders and external capital providers, it can be expected that firms that are able to obtain intragroup loans on an internal capital market will not be as financially constrained as firms that have to rely on bank borrowing. The results of Deloof (1998), who investigates the cash flow/investment relationship for large Belgian non-financial firms during the 1987-1991 period, confirm this hypothesis, which indicates that Belgian intragroup borrowing indeed does seem to alleviate asymmetric information problems between borrower and lender[7].

These arguments lead to the following hypothesis:

Hypothesis 1a: Firms that have access to intragroup debt will have higher debt ratios than firms that have no access to such debt.

At least some of the conflicts between shareholders and creditors can be mitigated by shortening the maturity of liabilities (see e.g. Myers, 1977). In other words, LT debt is associated with higher agency costs than ST debt. From an agency-theoretical perspective, substituting ST non-group debt by ST intragroup debt should be less beneficial than substituting LT non-group debt by LT intragroup debt. Hence we expect the impact of access to intragroup ST-debt on the ST-debt ratio to be smaller than the impact of access to intragroup LT-debt on the LT-debt ratio.

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[6] Stein (1997) demonstrates that headquarters of a corporate group can create value by reallocating funds on an internal capital market to competing projects, even if they are not able to relax overall firm-wide financing constraints.

[7] The flip side of the advantages of intragroup finance is that internal capital markets may give managers more funds and could thus lead to over-investment (Scharfstein and Stein (1997)). They could also do a worse job of allocating the available funds than would external capital markets, so that too much is spent in some divisions and not enough in others (Rajan, Servaes and Zingales (1998)). According to Gertner, Scharfstein and Stein (1994), intragroup financing decreases managerial entrepreneurship more than bank financing does. Crémer (1995) shows how better information circulation may weaken managerial incentives.

Hypothesis 1b: The impact of access to intragroup ST-debt on the ST-debt ratio will be smaller than the impact of access to intragroup LT-debt on the LT-debt ratio.

Debt financing may induce conflicts of interest between owners and creditors. When a loan is granted by the owner(s) of the firm, no such conflicts should arise. However, such loans may be to the disadvantage of minority shareholders and other creditors, if these exist. Indeed, although group debt is associated with less bankruptcy costs than bank debt, a large amount of group debt increases the probability that the other creditors will not be paid in full (Chowdry and Nanda (1994))[8]. This leads to the following hypothesis:

Hypothesis 2a: Firms with intragroup debt will have lower non-group debt ratios than firms without intragroup debt

Again, finance theory suggests that this effect will be different for ST and LT debt. According to Barclay and Smith (1995a), granting ST-debt rather than LT-debt will enhance the bank's bargaining position. If this is indeed the case, then banks will prefer providing firms with intragroup debts with additional ST-financing over granting them additional LT-debt, which would weaken their bargaining position even more. Thus the presence of intragroup debt will affect ST bank debt less than LT bank debt. Furthermore, while LT bank debt is the main category of LT non-group financing, most ST debt is *trade* debt, which is less influenced by information problems than bank debt (Biais and Gollier (1997), Petersen and Rajan (1997)). Hence, we expect the impact of ST intragroup debt on ST non-group debt to be weaker than the impact of (LT) intragroup debt on LT non-group debt.

Hypothesis 2b: The impact of access to intragroup ST-debt on the non-group ST-debt ratio will be smaller than the impact of access to intragroup LT-debt on the non-group LT-debt ratio.

C. Taxes, intragroup debt and leverage

So far we have assumed that access to intragroup debt affects debt ratios because intragroup debt allows borrowers to avoid the agency costs and costs of asymmetric information associated with external loans. However, intragroup debt could also affect debt ratios because of taxation. In

[8] If the intragroup debt has lower priority this need not necessarily be the case.

Belgium, no personal taxes have to be paid on capital gains on the sale of shares[9]. On the other hand, individuals must pay a 25% withholding tax on dividends. This may induce group members to keep internal cash surpluses within the group by redistributing them to other group members by means of intragroup loans[10]. Intragroup debt could serve as an instrument to minimize taxes in yet another way. If a group member with taxable profits borrows from a group member that reports a fiscal loss (before interest revenue), the former can deduct its interest payments whereas interest income for the latter will only be taxed as far as it exceeds the tax loss.

Most important, multinational corporate groups could minimize taxes by financing their Belgian investments through one of the recognized Belgian co-ordination centres (CC), which are granted a number of specific tax advantages[11]. The taxable income of a CC is determined as a fraction of the expenses and costs of operations, excluding personnel costs and financial expenses, and is therefore independent of the amount of financial revenues. As dividends to corporate shareholders are almost completely tax-exempt, borrowing from the CC could at the group level result in a higher tax advantage than borrowing from a bank. A plausible financing mechanism works as follows. A group member **A** invests borrowed or internally generated funds in the CC's capital, and the CC lends these funds to another group member **B**. The borrowing group member **B** can deduct interest expenses paid to the CC from his tax base; the CC does not have to pay taxes on its interest income; and the dividends paid by the CC to the investing group member **A** are almost completely tax-exempt.

In principle, both LT and ST intragroup debt could be used to minimize tax payments. However, as stated above, a large portion of ST-debt is trade credit. The tax advantage of intragroup

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[9] An exception are the capital gains which result from the sale of important participating interests to foreign companies, which are taxed at 16.5%.

[10] Transferring surpluses through equity investments might be less beneficial because dividends received by corporations are only for 95% exempt from corporate income tax. This exemption does only apply if the dividend is received from a company established in Belgium or in a country with a comparable tax regime, and this company may not be an investment company. Since 1994, the receiving company must also have a participating interest of at least 5% in the other companies equity, or this participating interest must have an acquisition cost of at least 50 million BEF.

[11] The concept of the CC was introduced into Belgian law in 1982, and has been a great success since. In order to be recognized as a CC, a Belgian branch or subsidiary of a multinational group must satisfy a number of conditions. Its sole object must be the development or centralization of one or more of the following activities, exclusively for the benefit of the group: financial management, group financing, accounting and administration activities, publicity and advertising, information gathering, insurance, scientific research and relations with national and international government authorities. Moreover, it has to be part of an international group with a minimum turnover, capital and reserves; within 2 years of establishment it has to employ at least 10 full-time employees; it must be recognized by the Belgian government, and it may not possess any shares.

financing is highest if this financing occurs through a CC. While a CC can use its capital to grant ST financial debt to other group members, it is not allowed to have any commercial activities, and therefore cannot use its capital to grant trade credit. Thus again we expect the impact of access to intragroup ST debt on ST leverage to be smaller than the impact of the access to intragroup LT debt on LT leverage.

If the tax advantages of intragroup debt are larger than the tax advantages of non-group debt, we expect firms with access to intragroup debt to use less non-group debt. Moreover, as we expect the tax difference between ST intragroup debt and ST non-group debt to be smaller than the difference between LT intragroup debt and LT non-group debt (in particular if one of the group members is a CC), we expect the impact of access to intragroup ST debt on ST non-group leverage to be smaller than the impact of the access to intragroup LT debt on LT non-group leverage.

In summary, empirical evidence consistent with hypotheses 1a, 1b, 2a and 2b could also be a consequence of the Belgian tax regime.

D. Asymmetric information, taxes, and intragroup guarantees

Belonging to a corporate group does not necessarily worsen the relations between the firm and its non-group creditors. Next to giving a firm *direct* financial support, by granting it a loan, other group members could also support the firm *indirectly* by securing its liabilities and commitments. It can be expected that firms that are able to have (some of) their liabilities secured by guarantees provided by other group members, will have higher debt capacities than other firms. This leads to the following hypothesis:

Hypothesis 3: Firms that are able to have their liabilities secured by intragroup guarantees , will have higher debt ratios than firms that are not able to obtain such guarantees.

Tax-based arguments for this hypothesis are less convincing. One could claim that granting intragroup guarantees can, in a trade-off framework, lower costs of financial distress and thus raise the optimal debt ratio. Access to intragroup guarantees is then associated with an indirect tax advantage. However, evidence on the empirical validity of the trade-off theory is at least mixed. Moreover, corporate groups (especially those that incorporate a CC) have much more

efficient ways of reducing tax payments. Indeed, if a firm can secure another group member's liabilities, it should be able to attract the same amount of external financing itself. So, in a group which incorporates a CC, the optimal tax minimizing strategy would be for one group member to attract the external financing, invest the means in the CC, and have the CC lend the money to the other group member, rather than securing the external debt the other group member attracts.

II. Sample and variables

The sample we use to test our hypotheses is based on a database provided by the National Bank of Belgium, which consists of financial statements of the 2000 most important Belgian firms. The sample was constructed as follows. We started with the 1474 firms for which a financial statement was available for each year of the 1989-1994 period. Because of the specific nature of their activities, firms in NACE-industries 1 ("energy and water"), 8 ("banking and finance, insurance, business services, renting") and 9 ("other services") were not included in the sample[12]. Some firms with missing data were also removed, as well as a few firms reporting zero sales during the period considered, and some firms for which sales growth or total assets growth was more than 100%. Eventually a sample consisting of 1083 firms was obtained.

We now discuss the construction of the variables. The denominator of the *debt ratio* is the book value of total assets. Since most of the firms in our sample are not listed on a stock exchange we are not able to calculate their market value[13]. As for the numerator, we consider LT-debt and ST-debt seperately as well as total debt. LT-debt is all debt due in more than one year; ST-debt is all other debt. Total debt is the sum of LT-debt and ST-debt[14]. Furthermore, for each debt category

[12] The NACE industrial classification serves the same purpose as the well known SIC classification, and has been established for industry taxonomy within the European Union. For details, see Eurostat (1985).

[13] At the end of 1994 only 155 Belgian companies were listed on the Brussels stock exchange. Moreover, many of these companies belonged to industries that are not considered here, such as 'Holdings', 'Electricity and gas', 'Banks and financial institutions' and 'Insurance'. Combined, at the end of 1994 these four industries constituted 61% of total stock market capitalization of Belgian companies (Generale Bank, 1995).

[14] Our debt measures do not include the liability items 'provisions and deferred taxes' and 'transitory accounts', although these items could also be considered as debt categories. Moreover, we consider the portion of LT-debt that is due within one year as ST-debt instead of LT-debt. We do so because there is no information available on the intragroup share of 'provisions and deferred taxes', 'transitory accounts' and the current portion of LT-debt. The Belgian financial statements only provide information on intragroup debt for two debt categories: debt due in more than one year and debt due within one year. We therefore cannot determine the extent to which specific debt categories, such as e.g. trade debt, are due to affiliated firms.

we differentiate between intragroup debt and non-group debt. Intragroup debt is all debt to affiliated firms; non-group debt is all other debt[15].

We use the *presence* of intragroup debt as a proxy for access to intragroup debt. Access to intragroup debt is thus identified ex post. The complexity of the corporate networks in Belgium makes it very difficult to get a clear picture of which firm belongs to which group, and most large Belgian firms (and most of the firms in our sample) are affiliated with other firms and could therefore be considered to be part of a group anyway. Moreover, group membership does not necessarily imply the ability to obtain intragroup debt, which is what we are interested in[16].

The variable "*intragroup guarantees"* is defined as the share of total debt secured by guarantees from affiliated firms. Belgian financial statements contain no information on the individual amounts of LT-debt and ST-debt secured by such guarantees, so we have to concentrate on total debt.

The specification of the other factors determining the debt ratios is based on the model of the capital structure of Belgian non-financial firms estimated in Deloof and Verschueren (1998). *Profitability* is calculated as income before taxes, interest expenses and extraordinary items, expressed as a proportion of total assets. *Variability* of income is measured by the standard deviation of profitability over the 1989-94 period. *Size* is measured as the natural logarithm of total assets.

As most of the firms in our sample are not listed on a stock exchange, we are not able to calculate their market value, which is needed to construct Tobin's q-ratio, the most common measure of investment opportunities. We therefore use the average percentage rate of *total assets growth* during the 1992-94 period as a proxy for investment opportunities.

Finally, in order to account for the differences in the nature of assets among firms in our sample, we include the ratio of *current assets* to total assets and the ratio of *fixed financial assets* to total assets. Fixed financial assets are shares in other (mainly affiliated) firms, intended to contribute to the

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[15] The financial statements not only contain information on debt payable to affiliated firms but also on debt payable to firms linked by participating interests. However, as this debt plays a very marginal role in the financing of the firms in our sample we do not consider it here. On average only 0.07% of total assets are financed with LT-debt granted by firms linked by participating interests, and only 0.3% of total assets are financed with ST-debt payable to firms linked by participating interests. The median values are zero.

[16] Of course, the absence of intragroup debt does not necessarily imply that the firm has no access to such debt either.

activities of the firm that holds them, by establishing a lasting and specific relationship, and loans that were granted with the same purpose. For some firms such assets are a significant part of total assets. In Deloof and Verschueren (1998) it was found that both the current assets ratio and the fixed financial assets ratio have a significant influence on capital structure.

All variables, except the variability measure, are averages from the balance sheets or income statements for the 1992-94 period. In order to check for industry influence, we include six NACE-code based industry dummies in our regressions (results not reported).

Descriptive statistics are presented in Table I. The average and median total debt ratio are high: about two thirds of total assets are financed with debt. However, it has to be taken into account that most of this debt is payable on a short notice, and is used to finance current assets: the average and median ST-debt ratio are respectively 0.539 and 0.526, whilst current assets are on average two thirds of total assets (the median current assets ratio is even higher at 0.696). For the median firm in the sample, *LT-debt* is only 5.7% of total assets. The average LT-debt ratio is higher at 0.114.

Intragroup debt plays a significant role in the financing of the firms in our sample: the average intragroup total debt ratio is 0.167, but the median value is much lower at 0.068. Most intragroup debt turns out to be ST-debt: on average this type of financing constitutes 11.9% of total assets, (median value of 0.048). While the average intragroup LT-debt ratio is 0.048, the median is in fact zero. On average 8.42% of total debt is secured by intragroup guarantees, but there are large differences across firms: standard deviation is 1.110; median value is zero.

There also are large differences in the importance of intragroup debt between sample firms. Figure 1 presents the distribution of intragroup ST and LT debt related to all ST and LT debt for the 873 sample firms with LT-debt and for all 1083 sample firms, which all have ST-debt. 530 firms have no intragroup LT-debt at all, while for 180 firms *all* LT-debt is intragroup debt. Only 163 firms have both intragroup LT-debt and non-group LT-debt. As for ST-debt, intragroup debt related to all ST debt is more evenly distributed. Only 225 of the 1083 sample firms have no intragroup ST-debt. On the other hand, for only 15 firms *all* ST-debt is intragroup debt.

Table II presents descriptive statistics for different categories of LT-debt and ST-debt (related to total assets). The main categories of LT-debt are bank loans and loans other than debentures and

subordinated loans. On average, debentures and subordinated loans finance less than 1% of total assets. Financial leases and non-financial debt, such as trade credit, taxes, wages and salaries due in more than one year, also play a very limited role in the financing of the sample firms. Trade debt is the most important category of ST-debt, financing on average more than a quarter of total assets (the median is 0.219), but the other debt categories, such as taxes, wages and salaries due within one year, are also quite important: average financial ST-debt is 0.120 and average 'other' ST-debt is 0.151.

Unfortunately, Belgian financial statements contain no information on the *intragroup* share of the individual debt categories. Table III provides an indication of these shares by presenting the Pearson correlation coefficients between the amount of debt (related to total assets) for the debt categories presented in Table II and the amount of intragroup debt (related to total assets). First LT-debt is considered. While the correlation between intragroup debt and bank debt is negative and close to zero, intragroup debt is strongly positively correlated with the so-called 'other loans'. This indicates that intragroup loans are not provided by a bank which is part of the same group, as has been observed in Japanese *keiretsu* groups (see for instance Hoshi, Kashyap and Scharfstein (1991)). Intragroup LT-debt seems to be a substitute for bank debt. As for ST-debt, we do not find such a clear-cut result. It seems that to some extent both financial debt and trade debt are due to affiliated firms.

Hypothesis 2a, that predicts a negative relationship between the use of intragroup debt and the non-group debt level, is based on the assumption that larger amounts of intragroup debt increase the probability that the other creditors will not be paid in full. This need not be the case if intragroup debt has lower priority than non-group debt. However, the results in Table III show a weak correlation between intragroup LT debt on the one hand and debentures and subordinated loans on the other hand, which indicates that most intragroup debt is not subordinated debt.

III. Empirical analysis

A. Univariate analysis

First, we test for differences in leverage across firms with or without intragroup debt, and across firms with or without intragroup guarantees, using the Student's t-test and the Mann-Whitney test of differences between subsamples. The results are given in Table IV.

As 210 firms in our sample have no LT-debt, we use a restricted sample of 873 firms with LT-debt for our analysis of LT-debt. Firms with intragroup LT-debt have an average LT-debt ratio of 0.20 (median value of 0.16), which is significantly higher than the average LT-debt ratio of 0.10 (median value of 0.06) for the firms without intragroup LT-debt. This result is consistent with hypothesis 1a. As predicted by hypothesis 2a, firms with intragroup LT-debt have significantly less non-group LT-debt than firms without intragroup LT-debt. For the firms with intragroup LT-debt, average non-group LT-debt is 0.05, while the average LT-debt ratio of the firms without intragroup LT-debt is 0.10. Median values are 0.01 and 0.06 respectively.

The t-tests and Mann-Whitney tests concerning ST-debt and total debt are less supportive for our hypotheses. Although we expected the impact of LT group debt on LT leverage to be larger than the impact of ST group debt on ST leverage, the result that firms with intragroup ST debt have significantly *less* ST debt than firms without intragroup ST debt is surprising, but might be a consequence of other differences between the firms in the two samples. The results from our multivariate analysis will tell whether this is the case. The results for total debt are quite similar to those for ST-debt, which was to be expected, as on average 80% of total debt is ST-debt.

The hypothesis that firms that are able to secure their liabilities by intragroup guarantees have higher leverage seems to be confirmed by the finding that firms which have some of their debt secured by intragroup guarantees have a significantly higher total debt ratio[17]. However, it is contradicted by the finding that there is no significant difference in debt levels as far as *non-group* debt is concerned. Indeed, hypothesis 3 implies that intragroup guarantees allow firms to attract more non-group debt. Intragroup guarantees should therefore lead to higher non-group debt levels. A possible explanation for these results is that the presence of intragroup guarantees acts as proxy for access to intragroup debt, and/or for other factors affecting debt ratios. Again, the multivariate analysis will tell whether this is the case.

B. Multivariate analysis

Previous research enabled us to identify some determinants of how Belgian firms choose their capital structure (Deloof and Verschueren (1998)). We now investigate whether intragroup

[17] Note again that we are not able to differentiate between *LT-debt* and *ST-debt* because Belgian financial statements contain no information on the amounts of LT-debt and ST-debt secured by intragroup guarantees.

borrowing influences total borrowing when these factors are controlled for. For this purpose we include dummies controlling for the presence of intragroup debt in a simple capital structure regression. The results are given in Table V.

We find that *ceteris paribus* firms with intragroup LT debt have more LT debt (regression 1) and more debt in general (regression 3), conforming hypothesis 1a, whereas the fact of having intragroup ST debt does not seem to influence ST borrowing (regression 2) or borrowing in general (regression 3)[18]. This indicates that the difference in ST-debt use between companies with and companies without intragroup ST-debt, reported in the previous section, is caused by other differences between the two samples. The results for the control variables are quite close to those in previous research on the capital structure choice of Belgian firms (Deloof and Verschueren (1998)), and are in general an indication that asymmetric information does play an important role in corporate financing decisions in Belgium. We find a significant negative relationship between variability and ST-debt, and a significant positive relationship between size and LT-debt. Growth has a significantly positive effect on both LT-debt and ST-debt[19].

We detect a negative relationship between profitability and ST-debt. This result may help us to shed some light on the question whether firms with access to intragroup debt have higher leverage because of information asymmetries or because of tax considerations. Indeed, the tax advantage of intragroup debt stems from the deductibility of interest charges. Thus we would expect this advantage to be more important for firms with high (taxable) profits before interest charges, and thus such firms to have higher leverage, which turns out not to be the case[20].

We then analyse whether the presence of intragroup debt influences the use of *non-group* debt financing (results reported in Table VI). We first verify whether the presence of LT intragroup debt affects the firm's use of non-group LT-debt. Regression (4) shows that this is indeed the case: firms with LT intragroup debt use less non-group debt. The results for ST-debt are alike

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18 It should be noted that the main type of ST-debt is trade debt, and that capital structure theory has little to say about the use of such debt financing. To some extent, this may distort our results. Unfortunately, Belgian financial statements contain no information on the intragroup share of the individual debt categories.

19 This result is less surprising than it may seem at first sight. Indeed, Rajan and Zingales (1995) report a negative relationship between growth and leverage, but their growth variable measures the *growth opportunities*, whereas ours measures *past growth*. As most of the firms in our sample are not listed, we cannot calculate Tobin's Q. In most research studying the relation between past growth and leverage positive or non-significant relations are reported (e.g. Toy, Stonehill, Remmers, Wright and Beekhuisen, 1974; Baskin, 1989; Allen, 1993).

20 Our profitability measure may, however, be a weak proxy for the relevant variable, viz. tax income.

(see regression (5)). However, these results do not confirm Hypothesis 2b: the coefficient of the intragroup ST-debt dummy in regression (4) is larger than the coefficient of the intragroup LT-debt dummy in regression (4).

Regression (6) shows the impact of both intragroup ST-debt and LT-debt dummies on *total* non-group debt. Comparison of the regression coefficients for the intragroup LT-debt dummy found in regressions (4) and (6) indicates that the presence of intragroup LT-debt influences the amount of non-group ST-debt as well. Moreover, the impact of intragroup LT-debt on total non-group debt is larger than the impact of intragroup ST-debt. This issue is further investigated in regression (7), where we check whether the presence of ST intragroup debt influences the firm's use of non-group LT debt, controlling for the presence of LT intragroup debt, and in regression (8), where we check whether the presence of LT intragroup debt also influences the use of non-group ST-debt, controlling for the presence of ST intragroup debt. It turns out that there is indeed some extra effect, albeit less significant as far as the presence of intragroup ST-debt on non-group LT-debt is concerned.

For the 337 firms with both types of intragroup debt, we checked if the *amount* of intragroup debt also influences the non-group debt ratio (results reported in Table VII). This seems to be the case: both the amount of intragroup LT-debt (regression 9) and the amount of intragroup ST-debt (regression 10) are negatively related to all non-group debt categories. Thus, it is not only the presence of intragroup debt but also the *amount* of it that influences the use of non-group debt.

Finally, in order to test the hypothesis that intragroup guarantees lead to higher debt ratios, we include an additional dummy variable in our basic model. This variable equals one if the firm has some of its debt secured by intragroup guarantees, and equals zero if not. In regression (12) (Table VII), where total debt is the dependent variable, the coefficient of this dummy variable is significant and positive, confirming hypothesis 3: intragroup guarantees lead to higher total debt ratios. The coefficient of this variable is also significant and positive in regression (13), where non-group total debt is the dependent variable, again confirming hypothesis 3: intragroup guarantees lead to higher non-group debt ratios[21]. Notice that once again profitability seems to be

[21] When regression (12) is compared with regression (3) and regression (13) is compared with regression (6), it can be seen that including the intragroup guarantees dummy does not affect the results for the intragroup LT-debt and ST-debt dummy variables: the coefficients of these variables keep the same sign, the same significance level and (almost) the same value.

negatively related to leverage, whereas the trade-off theory predicts a positive sign. As the tax-based argument for the use of intragroup guarantees depends upon the validity of the trade-off theory, this argument is less convincing than its counterpart based on asymmetric information.

In summary, the results of the multivariate analysis confirm that the access to intragroup finance and/or intragroup guarantees influences both total debt levels and non-group debt levels as predicted by our main hypotheses.

IV. Conclusions

In this paper, we analyse the impact of access to intragroup debt and intragroup guarantees on the financing decisions of firms. If asymmetric information plays an important role in corporate financing decisions, we expect that firms with access to an internal capital market will be less financially constrained than other firms are, and will thus have higher debt levels. Such higher debt levels may also be a mere consequence of the Belgian tax system. On the other hand, the presence of intragroup debt on a firm's balance sheet weakens the positions of other creditors, which should result in lower *non-group* leverage. Of course, access to intragroup finance could also reduce the *need* for non-group debt. Finally, guarantees on the firm's liabilities, offered by other group members, could strengthen the position of non-group creditors, and thus result in higher non-group leverage.

We empirically investigate these questions as follows. First, we examine the relationship between the presence of intragroup debt on the one hand and both total leverage and non-group leverage on the other hand for a sample of 1083 large non-financial Belgian firms. Our results show that firms with access to intragroup financing do indeed have higher leverage than firms that cannot use such funds, but that, at the same time, such firms also have lower non-group debt levels. We further explore this issue by relating the *amount* of intragroup debt to the use of non-group debt financing, and again we find a negative relationship. To what extent this relation is a consequence of tax legislation or (the avoidance of) information asymmetries is unclear, although the negative relationship between profits and leverage is more in favour of the asymmetric information story.

Second, we analyse the relationship between the presence of intragroup guarantees on the one hand and total leverage and non-group leverage on the other hand. The results of this analysis support the hypothesis that intragroup guarantees allow firms to attract more non-group debt,

and to have higher total leverage. Although there may be an indirect tax effect associated with intragroup guarantees, other elements seem to indicate that this tax effect is not the main reason for the existence of intragroup guarantees.

Thus it seems that the presence or absence of an internal capital market is an important factor in the leverage choice. Although our results reveal a relationship between the access to intragroup debt and intragroup guarantees and both total debt use and non-group debt use, further research on the financing behaviour of firms belonging to corporate groups could prove very enriching.

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Table I
Descriptive statistics (1083 Belgian non-financial firms, 1992-1994)

	Median	Average	St. dev.
Total debt	0.679	0.653	0.207
Intragroup total debt	0.068	0.167	0.209
Non-group total debt	0.475	0.486	0.256
LT-debt	0.057	0.114	0.146
Intragroup LT-debt	0	0.048	0.114
Non-group LT-debt	0.011	0.066	0.107
ST-debt	0.526	0.539	0.229
Intragroup ST-debt	0.048	0.119	0.164
Non-group ST-debt	0.387	0.420	0.244
Intragroup guarantees	0	0.084	1.110
Profitability	0.043	0.049	0.073
Variability (*)	0.033	0.048	0.075
Total assets	1,246,766	4,354,249	15,862,074
Growth	0.027	0.037	0.142
Current assets	0.696	0.666	0.236
Fixed financial assets	0.032	0.130	0.188

Notes: (*) Variability of profitability is calculated over the 1989-1994 period; all variables are related to total assets, except growth, which is the percentage growth in total assets, and total assets, which is expressed in thousands of Belgian Francs;

Figure 1
This figure presents the distribution of the % share of intragroup debt for LT-debt and ST-debt (1083 Belgian non-financial firms, 1992-1994)

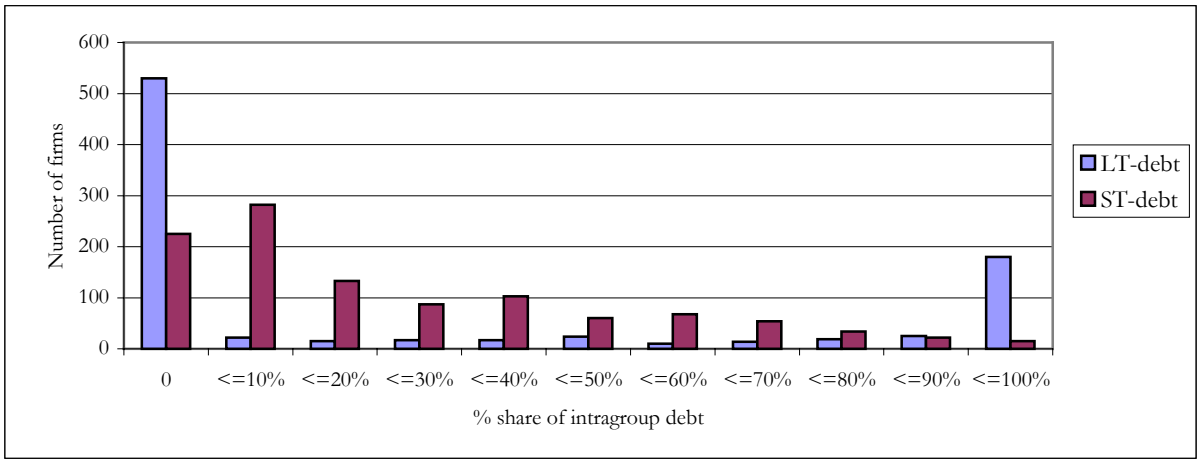

Table II
Descriptive statistics for debt categories
(1083 Belgian non-financial firms, 1992-1994)

	Median	Average	St. dev.
LT-debt			
Bank loans	0	0.048	0.090
Debentures and subordinated loans	0	0.007	0.033
Other Loans	0	0.044	0.109
Financial leases	0	0.006	0.034
Non-financial debt	0	0.008	0.041
ST-debt			
Financial debt	0.050	0.120	0.158
Trade debt	0.219	0.268	0.194
Other debt	0.114	0.151	0.140

Note: all variables are related to total assets.

Table III

Pearson correlation coefficients
(1083 Belgian non-financial firms, 1992-1994)

	Intragroup LT debt	Intragroup ST debt
LT-debt		
Bank loans	-0.06	-
Debentures and subordinated loans	0.15	-
Other loans	0.82	-
Financial leases	0.25	-
Non-financial debt	0.08	-
ST-debt		
Financial debt	-	0.20
Trade debt	-	0.22
Other debt	-	-0.10

Table IV

This table presents average and median debt ratios, and 2-tailed p-values of the Student's t-test and the Mann-Whitney test of differences between firms with intragroup debt and firms without intragroup debt, and between firms with intragroup guarantees and without guarantees
(1083 Belgian non-financial firms, 1992-94)

	Average (median)		p-value	
			Student's t	Mann-Whitney
	Intragroup debt	No intragroup debt		
LT-debt	*(343 firms)*	*(530 firms) (*)*		
All LT-debt	0.20 (0.16)	0.10 (0.06)	0.000	0.000
Non-group LT-debt	0.05 (0.01)	0.10 (0.06)	0.000	0.000
ST-debt	*(858 firms)*	*(225 firms)*		
All ST-debt	0.52 (0.51)	0.60 (0.58)	0.000	0.000
Non-group ST-debt	0.37 (0.34)	0.60 (0.58)	0.000	0.000
Total (LT+ST) debt	*(864 firms)*	*(219 firms)*		
All debt	0.65 (0.67)	0.68 (0.71)	0.074	0.005
Non-group debt	0.44 (0.42)	0.68 (0.71)	0.000	0.000
	Intragroup Guarantees	No intragroup guarantees		
Total (LT+ST) debt	*(166 firms)*	*(917 firms)*		
All debt	0.69 (0.72)	0.65 (0.66)	0.001	0.008
Non-group debt	0.48 (0.48)	0.49 (0.48)	0.746	0.915

Note: (*) 210 of the 1083 firms in our sample have no LT-debt and are therefore not included.

Table V
The determinants of the debt ratio
(1083 Belgian non-financial firms, 1992-94)

	(1)	(2)	(3)
Dependent variable:	LT-debt	ST-debt	Total debt
Sample:	LT-debt>0	ST-debt>0	LT-debt>0 ST-debt>0
Constant	0.26 (0.000)	0.122 (0.122)	0.46 (0.000)
Intragroup LT-debt>0	0.050 (0.000)	-	0.040 (0.003)
Intragroup ST-debt>0	-	0.020 (0.152)	-0.013 (0.441)
Profitability	-0.097 (0.118)	-0.46 (0.000)	-0.45 (0.000)
Variability	-0.019 (0.722)	-0.16 (0.022)	-0.12 (0.112)
Size	0.011 (0.005)	0.0053 (0.285)	0.014 (0.015)
Growth	0.069 (0.031)	0.12 (0.002)	0.19 (0.000)
Current Assets	-0.39 (0.000)	0.54 (0.000)	0.15 (0.000)
Fixed Financial Assets	-0.19 (0.000)	-0.062 (0.871)	-0.19 (0.000)
Adjusted R^2	0.33	0.44	0.21
Number of Firms:	873	1083	873

Notes: p-values in parentheses. All regressions include six industry dummies (results not reported).

Table VI
The determinants of the debt ratio
(1083 Belgian non-financial firms, 1992-94)

	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Non-group LT-debt	Non-group ST-debt	Non-group total debt	Non-group LT-debt	Non-group ST-debt
Sample:	LT-debt>0	ST-debt>0	LT-debt>0 ST-debt>0	LT-debt>0 ST-debt>0	LT-debt>0 ST-debt>0
Constant	0.24 (0.000)	0.45 (0.000)	0.64 (0.000)	0.24 (0.000)	0.40 (0.000)
Intragroup LT-debt>0	-0.080 (0.000)	-	-0.16 (0.000)	-0.076 (0.000)	-0.081 (0.000)
Intragroup ST-debt>0	-	-0.14 (0.000)	-0.12 (0.000)	-0.019 (0.048)	-0.10 (0.000)
Profitability	-0.079 (0.115)	-0.28 (0.000)	-0.30 (0.002)	-0.082 (0.103)	-0.22 (0.010)
Variability	-0.046 (0.286)	-0.20 (0.011)	-0.19 (0.024)	-0.038 (0.379)	-0.15 (0.039)
Size	0.0064 (0.050)	-0.0073 (0.184)	0.0027 (0.683)	0.0074 (0.026)	-0.0047 (0.408)
Growth	0.065 (0.012)	0.061 (0.141)	0.12 (0.014)	0.064 (0.012)	0.060 (0.179)
Current Assets	-0.26 (0.000)	0.40 (0.000)	0.15 (0.001)	-0.26 (0.000)	0.40 (0.000)
Fixed Financial Assets	-0.13 (0.000)	-0.021 (0.617)	-0.12 (0.008)	-0.13 (0.000)	0.0020 (0.960)
Adjusted R^2	0.23	0.40	0.38	0.23	0.44
Number of Firms:	873	1083	873	873	873

Notes: p-values in parentheses. All regressions include six industry dummies (results not reported).

Table VII
The determinants of the non-group debt ratio
(1083 Belgian non-financial firms, 1992-94)

	(9)	(10)	(11)	(12)	(13)
Dependent variable:	Non-group LT-debt	Non-group ST-debt	Non-group total debt	Total debt	Non-group total debt
Sample:	Intragroup LT-debt>0 Intragroup ST-debt>0			LT-debt>0 ST-debt>0	
Constant	0.14 (0.021)	0.34 (0.001)	0.48 (0.000)	0.45 (0.000)	0.63 (0.000)
Intragroup LT-debt	-0.17 (0.000)	-0.31 (0.000)	-0.48 (0.000)	-	-
Intragroup ST-debt	-0.16 (0.000)	-0.54 (0.000)	-0.70 (0.000)	-	-
Intragroup LT-debt>0	-	-	-	0.038 (0.005)	-0.16 (0.000)
Intragroup ST-debt>0	-	-	-	-0.019 (0.236)	-0.13 (0.000)
Intragroup Guarantees>0	-	-	-	0.042 (0.008)	0.054 (0.003)
Profitability	-0.16 (0.011)	-0.21 (0.049)	-0.37 (0.002)	-0.43 (0.000)	-0.27 (0.006)
Variability	-0.027 (0.676)	-0.052 (0.634)	-0.079 (0.507)	-0.12 (0.107)	-0.19 (0.022)
Size	0.0026 (0.488)	-0.0010 (0.869)	0.0015 (0.822)	0.014 (0.012)	0.0033 (0.613)
Growth	0.11 (0.000)	0.041 (0.355)	0.16 (0.001)	0.19 (0.000)	0.12 (0.014)
Current Assets	-0.10 (0.001)	0.26 (0.000)	0.16 (0.002)	0.15 (0.000)	0.15 (0.000)
Fixed Financial Assets	-0.056 (0.030)	-0.060 (0.168)	-0.12 (0.015)	-0.19 (0.000)	-0.12 (0.011)
Adjusted R^2	0.25	0.52	0.55	0.21	0.38
Number of Firms:	337	337	337	873	873

Notes: p-values in parentheses. All regressions include six industry dummies (results not reported).