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WORKING PAPER

Court-supervised Restructuring: Pre-bankruptcy Dynamics, Debt Structure and Debt Rescheduling

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Court-supervised Restructuring: Pre-bankruptcy Dynamics, Debt Structure and Debt Rescheduling.

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Abstract.

We analyze the debt dynamics of corporations that reorganize under Belgian court-supervised restructuring, using a unique sample of small corporations. Small firms systematically accumulate unsecured trade credit and unpaid taxes and social contributions in the running up to bankruptcy-reorganization. First, small firms accumulate overdue taxes and social contributions, pushing the government administration in the unintended role of lender of last resort during the pre-bankruptcy period. Second, we find that the pecking order theory and specific trade credit theories predict the levels of trade credit accumulated during the pre-bankruptcy period very well. Our findings suggest that pre-bankruptcy dynamics strongly affect the debt structure at the moment of initiation of the procedure and in this way the ultimate outcome of the restructuring process.

JEL: G33, G38, K20

Keywords: court-supervised reorganization; bankruptcy; pecking order theory

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1. Introduction.

Using a unique sample of small corporations with confirmed reorganization plans under Belgian court-supervised restructuring, we analyze the pre-bankruptcy dynamics that determine the debt structure at the start of the reorganization procedure. These dynamics are predicted by the pecking-order theory, by specific trade credit theories, and by specific legislation on personal liability rules for unpaid taxes and social contributions. The debt structure, which mainly consists of unsecured trade credit and unpaid taxes and social contributions, is typically rearranged under court-supervised reorganization by way of debt forgiveness and debt deferral.

Entrepreneurs demand more trade credit during the pre-bankruptcy period to finance their loss-making business, and suppliers are willing to provide this credit. Cash flow clearly precedes trade debt in the pecking order (see Myers, 1984 on the classical pecking order theory) after controlling for a distressed firm's access to bank financing. This finding is particularly present in subsamples where banks did contract their lending in the running up to bankruptcy-reorganization. This pre-bankruptcy phenomenon contributes to the high trade debt percentage of 38,8% observed in our sample firms. The trade debt rearrangement typically consists in drastic debt forgiveness. The percentage of trade debt forgiveness rises with the level of trade credit. Deviations from the absolute priority rules disfavoring trade creditors are omnipresent. This type of APR deviation is not uncommon in other countries since the trade creditors' expected proceeds under bankruptcy-liquidation are typically close to zero, especially if the debtor is a small firm. Our findings offer an additional argument to rationalize these APR deviations, namely that trade creditors are responsible for at least part of the undue trade credit (most probably because of their equity-like stake).

The tax and social security administrations star as passive lenders of last resort during the pre-bankruptcy period. Firms that need to pay more social contributions (payroll taxes) and indirect taxes (value added tax, i.e. sales tax) systematically accumulate overdue government debt, and use it as an 'informal' financing mechanism to finance their distressed business and settle other claims. This is not surprising for three coherent reasons: (a) payroll taxes and sales taxes are considerable (b) personal liability rules for overdue taxes and social contributions do not exist in Belgium, and (c) government administration typically acts slowly to overdue payments. More general, we observe that government claims increase for 69,7% of our sample firms in the running up to bankruptcy-reorganization, while banks only expand their lending for around 30% of our sample firms. Trade creditors expand their credit in 46,1% of the cases. Further analysis reveals that government debt is more likely to expand if trade debt and/or bank debt contract, which suggests that the manager chooses to substitute government debt for other debt sources. The almost mechanical supply effect of government debt results in a government debt percentage of 26,1% in our sample. The government administration is often unwilling to forgive debt, officially for legal or judicial reasons, less officially because they are likely aware of the pre-bankruptcy debt dynamics. Especially the social security administration seems to prefer liquidation once it comes to voting on the restructuring plan. This may be problematic because the 'mandatory' repayment of government debt increases the likelihood of the firm's transfer

to bankruptcy-liquidation during the post-confirmation stage[1]. From an efficiency point of view, it cannot be ruled out that viable firms with higher levels of government debt are more likely to be liquidated simply because they can temporarily not meet the high promised repayments on their government debt. The success of plan execution after all depends on the firm's ability to meet the projected cash flows. This implies the presence of type-II errors (see White, 1994), where viable firms only suffering from financial distress are shut down instead of reorganized.

Banks and trade creditors are often regarded as well-informed creditors. Using unique data provided by intermediation of the National Bank of Belgium, we observe that banks do not withdraw more funds during the pre-bankruptcy period when the distressed firm is ultimately liquidated during the post-confirmation stage, suggesting that banks have a liquidation preference. Although trade creditors are generous providers of finance, they do not supply trade credit blindly to firms demanding it. Trade creditors are less eager to supply trade credit to entrepreneurs involved in earlier bankruptcies (in other boards than this of our distressed sample firm), suggesting that the reputation of the debtor does play an important role. Franks & Sussman (2005) find that banks contract their debts at the same time that trade creditors expand their lending during out-of-court restructuring in the United Kingdom. We consistently find that trade creditors provide more credit in the running up to bankruptcy when (1) banks contract their lending during the pre-bankruptcy period and (2) distressed firms are heavily loss making. We find evidence on a one-way substitution of trade credit for bank debt in line with Franks & Sussman (2005), which might suggest for the existence of informational asymmetry between trade creditors and banks.

This paper contributes to the literature on the pecking order theory. First, we find that cash flow precedes trade debt in the pecking order after controlling for a distressed firm's access to bank financing (like in Peterson and Rajan, 1997). Second, we explore the concept of 'debt capacity' in our sample of distressed firms. Lemmon and Zender (2007) argue that the debt capacity of a firm is reached if the costs of financial distress curtail further debt issues. They find that the pecking order theory appears to be a good description of financing behavior after controlling for a firm's debt capacity. Specifically we use the bank's credit contraction during the pre-bankruptcy period to distinguish distressed firms with heavily constrained debt capacity from those with softer debt capacity considerations. Using well-defined subsamples of firms under different debt capacity constraints, we further analyze our findings on the pecking order sequence for distressed firms.

This paper is organized as follows. Section 2 and 3 discuss respectively the legal framework, and the data. In section 4, we provide a detailed overview of the debt composition at the start of the procedure for our distressed sample firms. Section 5 provides insight in debt rescheduling as reported in the confirmed plans. The source of debt levels of trade credit and government debt (subject to rescheduling) are analyzed in section 6 and 7 by reduced form models. Section 8 largely documents the pre-bankruptcy debt dynamics, and section 9 provides robustness checks on the pecking order theory for distressed firms and introduces the concept of debt capacity for distressed firms. Section 10

[1] Using a Canadian sample, Fisher & Martel (1995, 2004) also find that government debt impedes the likelihood of successful reorganization.

gives a legal rationale for the extensive use of government debt in Belgium, and compares with the U.S. Finally, section 11 concludes.

2. Legal Framework.

An insolvent firm can either liquidate or reorganize. In Belgium, liquidation and reorganization are regulated by distinct legislations. The United States Bankruptcy Code makes an equivalent distinction between Chapter 7 (bankruptcy-liquidation) and Chapter 11 (bankruptcy-reorganization) within the same legislation. The Belgian reorganization legislation was enacted in 1997, with the objective to reduce the number of bankruptcies and to preserve firms with profitable operations by means of a process of court-supervised financial restructuring. This legislation is called the Law on Judicial Composition (hereafter LJC) and came into force on January 1st 1998.

Figure 1 below illustrates the timing of the Belgian LJC in three stages. In the pre-bankruptcy period (stage I), the debtor takes a decision to file for bankruptcy-reorganization or not. The debtor has to file with the court where the firm is registered, and the register of the firm must by law be related to real activity. The creditor cannot file a petition. The bankruptcy court makes an initial assessment on the viability of the distressed firm when a petition is filed. If the court accepts the petition, the debtor remains in possession and must draft and confirm a reorganization plan during a six-month exclusivity period. The court appoints an examiner who controls the debtor and assists him with drafting the plan[2]. This exclusivity period can be extended by maximum 3 months to deal with bargaining issues. In the U.S., Bris et al. (2006) refer to the bargaining period as the Chapter 11-phase 'from submission to plan confirmation'. We define stage II of the Belgian bankruptcy system as the pre-confirmation stage consisting of both phases 'from filing to plan' and 'from submission to plan confirmation'. Like in the U.S., secured creditors are subject to an automatic stay during the pre-confirmation stage.

At the end of stage II, a meeting of the unsecured creditors votes on the debtor-proposed reorganization plan. The unsecured creditors mainly consist of trade creditors and the social security administration. A reorganization plan is approved if (i) a majority of unsecured creditors present at the meeting vote in favor of the plan, and (ii) the value of the claims voting in favor of the plan represent at least 50% of the total value of claims of unsecured creditors present at the meeting. The debts of these creditors have to be, in principal, repaid during a maximum period of 24 months, i.e. the court-supervised post-confirmation stage (see further on this stage – stage III).

Secured creditors do not vote collectively. Their individual approval is obliged when the debtor proposes an alteration to their legal entitlements. If the secured creditor and the debtor reach a new agreement on the loan repayments, the creditor cannot seize or sell assets during the post-confirmation stage as long as the debtor fully complies with this new contract. If on the other hand no agreement is reached between both parties, the Belgian legal framework provides the debtor with only one alternative, i.e. the deferral of the principal amount of the loan for a maximum of 18 months, on the condition that during this period interest is paid. As a consequence, the secured creditor will

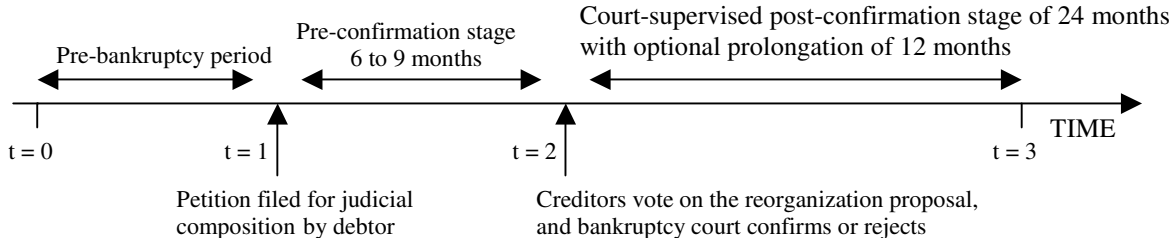
[2] See Hahn (2004) for a discussion on the appointed examiner (trustee) in the U.S.

temporarily not be able to seize and sell the pledged assets. The secured creditor will always regain his liquidation rights after 18 months. More far-reaching legal measures, comparable to the forced rescheduling of secured debt in accordance with § 1129 U.S. Bankruptcy Code, are not available to the debtor.

After the approval by the unsecured creditors and any arrangement with secured creditors (or forced deferral), the court confirms[3] the plan and the debtor is supposed to fully execute this plan. The plan execution takes place during a period of maximum 24 months under supervision of the judges and the appointed examiner. Our dataset clearly shows that the court-supervised period is fixed at 24 months for 98% of the cases. During this fixed period, the court and creditors can however decide to extend the court-supervised period with a maximum of 12 months. Upon prolongation, a new plan needs to be drafted because the initial confirmed plan is only drafted for a period of 24 months. An extension of the court-supervised post-confirmation period occurs in approximately 10% of the cases.

The court-supervised post-confirmation stage can lead to the full execution of the plan or the failure to do so. In the latter case, a creditor or the appointed examiner can file a request with the court to revoke the judicial composition and the post-confirmation stage. The debtor can do the same if it is clear that a full execution or any creditor-approved amendment of the plan is unfeasible. If the court grants the request for revocation, it can opt for the conversion of the firm to bankruptcy-liquidation.

Figure 1: Time schedule of the judicial composition (bankruptcy-reorganization).



[3] Because the L.C.J. states that the court 'can' confirm the plan, certain courts have assumed the authority to test the feasibility of the plan. We are however only aware of a few cases where the Bankruptcy Court refused to confirm the plan after unsecured creditor approval.

3. Data

3.1. Data sources and sampling procedure.

Our dataset consists of information on distressed firms with confirmed reorganization plans under court-supervised reorganization in Belgium. Approximately 306 plans were confirmed between January 1, 1998 and June 30, 2004 with one of the 23 regional Belgian Bankruptcy Courts. Our sample is restricted to all confirmed reorganization plans submitted to 17 of those Bankruptcy Courts. This amounts to 190 reorganization plans or 62% of the population of confirmed plans. Corporations and sole proprietorships submitted respectively 125 and 65 plans (125+65 = 190). Blocks of closely related corporations jointly submitted five out of those 125 plans[4]. The dataset is complemented with financial statement data from the Graydon-database and the Belfirst DVD's, which are delivered by the private data vendors Graydon Belgium and Bureau van Dijk respectively.

We analyze a sample of small distressed corporations that submitted a going concern plan. We exclude corporations with total assets exceeding € 5.000.000, which leaves a sample of 107 small corporations. We additionally exclude an incorporated soccer club and one liquidation scheme among the small corporations[5]. After these restrictions we retain 105 small corporations in the sample. Our dataset is complemented with financial statement data prior to petition filing for bankruptcy-reorganization. To ensure a sufficiently high quality of the financial statement data, we do not include corporations for which the time period between the financial statement date and the filing date for bankruptcy-reorganization is longer then 18 months. This removes another 14 corporations, resulting in a sample of 91 corporations.

Since the court jointly appraises the cases of closely related corporations, the data on the financial statements should be aggregated. Simple data aggregation is not recommended though, because of intra-group transactions and consolidated accounts are not available. Plans submitted by closely related corporations are therefore excluded from the sample of corporations resulting in final sample of 89 corporations[6].

3.2. Sample firms.

The corporations differ by legal form. 45 corporations are non-quoted public limited liability corporations (Société Anonyme), 41 are private limited companies (Société Privée à Responsabilité Limitée), and 3 incorporated firms have another legal status. Table 1 gives summary statistics sorted by legal form. Total liabilities are measured at the initiation of the procedure, i.e. 6 to 9 months before plan confirmation. The public limited liability corporations are clearly larger than the private limited companies. The sole proprietorships are small (based on the comparison of the liabilities). Our sample

[4] Five blocks of incorporated firms file jointly a plan. Those blocks respectively consists of 9, 4, 2, 2, and 2 corporations. 139 corporations (120+9+4+2+2+2) are subsequently involved with the 125 plans.
[5] Three large corporations confirmed a liquidation scheme, but are already excluded.
[6] Three groups were already removed before because total group assets were larger than € 5.000.000 .

firms are less underwater compared to those in Bris et al. (2006), likely because we use a sample of confirmed plans like in Baird et al. (2007).

Table 1: Firm characteristics sorted by legal form.

	N	*Mean*	*Median*	*Std. Dev.*	*Min*	*Max*
Public Limited Liability Corporation						
Pre-bankruptcy total Assets (€ 1000)	45	1472	1069	1365	90	4942
Employees (No.)	45	10.22	6	10	1	37
Liabilities (€ 1000)	45	1343	1104	1142	103	4873
Liabilities/pre-bankruptcy assets	45	1.1395	0.9788	0.5650	0.3793	3.0206
Private Limited Companies						
Pre-bankruptcy total Assets (€ 1000)	41	509	235	620	21	3015
Employees (No.)	41	5.05	2	7.15	0	28
Liabilities (€ 1000)	41	463	311	481	18.54	1848
Liabilities/pre-bankruptcy assets	41	1.1080	0.9742	0.4975	0.3665	2.6315

4. The debt structure at the moment of initiation of the procedure

Panel A of table 2 shows that bank debt and trade credit are the main sources of finance in our sample of 89 small corporations and that the latter source dominates the former on average[7]. Only 58 of the 89 distressed sample firms have secured bank financing at all at (the moment of) procedure initiation. Due taxes and social claims also constitute a considerable debt mass, while junior-subordinated owner/director debt[8] is not a frequent source of finance. Panel B shows that trade creditors remain the main providers of external funds even for the 68 cases with bank debt (both secured and unsecured)[9]. Remarkably, in both panel A and B distressed firms rely heavily on tax and social contributions as a source of finance (more than 20% in both panels). Unpaid government claims are omnipresent and seem larger in Belgium than in other countries like the U.S. or Canada. Bris et al. state that median Chapter 11 tax claims are zero in their sample. Their ratio of tax claims[10] on total liabilities depends on the filing district. The ratio averages 14% in New York, while it is only 3% in Arizona. Using a sample of confirmed plans, Baird et al. (2007) report a percentage of 7,3%. Unpaid Canadian government claims average only a few percentages (Fisher & Martel, 1994).

Panel C of table 2 reports that almost 90% of bank debt is covered by a fixed and/or floating charge. These securities provide a contractual liquidation right contingent on default. A fixed charge is a security in real estate. A floating charge is a security on machinery and working capital such as

[7] Two remarks have to be made on the outstanding trade credit. First, creditors benefiting from retention of title clauses are most likely trade creditors, and their claims are therefore included in the trade credit. Second, due employee wages are incorporated in the trade debt because bankruptcy documents do not allow to distinguish them from trade claims. Social security contributions regarding the employee wages are included in the government debt. Clearly, the continuation decision of distressed firms critically depends on the employees, which typically results in paying out wages (but without transferring social contributions to the administration). Fisher & Martel (1994) report that only 23% of Canadian plans involve some wage claims; wage claims to total liabilities amounts to 0.35% in their sample study.

[8] Owner/director debt includes credit provided by group companies.

[9] See Rajan and Zingales (1995) for an analysis of the capital structure for a sample of large listed companies of the G-7 countries. Those companies are on average not distressed, and their accounts payable to assets amounts approx. 15 %.

[10] Tax claims include social contributions in the U.S. Government debt in our study refers to both tax and social contributions.

receivables and inventory. This high degree of collateralization is comparable to other European countries (see Davydenko and Franks for the U.K., France and Germany, 2006). In our sample, multiple bank situations occur in only 16 of 89 cases[11], implying that securities are often concentrated in the hands of a single bank.

The debt levels at the start of the procedure are the result of past financing decisions made by banks, but equally reflect past policy on trade credit provision. There is an extensive corporate finance literature explaining all those issues. Less is however known about the pre-bankruptcy debt dynamics that co-determine debt levels at procedure initiation. Panel D of table 2 provides unique data on the bank credit flow of 51 firms (out of 61 cases with bank debt) during a 12-month pre-bankruptcy period[12]. The flows are calculated as the difference between the bank debt at procedure initiation and the bank debt 12 months before filing for bankruptcy-reorganization, scaled by this latter bank debt level. The loan is reduced by 7,12% on average and by 16,37% on median. The bank reduces its lending in 37 cases and expands it in 14 cases. Panel D gives statistics by splitting the sample in firms that ultimately fail[13] (25 firms), and those that remain intact during the court-supervised post-confirmation stage (26 firms). Although banks seem to withdraw more of their outstanding credit in the running up to judicial composition if the firm ultimately fails than if it survives, the means of both samples do not differ significantly.

[11] 2, 3 and 4 banks are involved with respectively 12, 3 and 1 corporations.
[12] Data are obtained by intermediation of the Central Corporate Credit Register of the National Bank of Belgium. Missing cases are largely due to small credits (< € 25.000), which are not reported in the register.
[13] All of those failing firms are transferred to bankruptcy-liquidation. Unlike in the U.S., unviable firms are almost exclusively liquidated in bankruptcy, including firms with all assets encumbered by liens.

Table 2: Debt composition of distressed sample firms as reported in the approved reorganization plans.

Panel A shows the debt structure of our 89 small corporations at the start of the procedure. In panel B, the sample firms are restricted to 68 firms with (secured and unsecured) bank debt. Panel C provides data on loan securities. These securities provide a contractual liquidation right contingent upon default. A fixed charge is a security in real estate. A floating charge is a security on mainly working capital. Panel D gives information on the bank debt contraction (-) and expansion (+) in percentage during a 12-month pre-bankruptcy period for 51 of 68 bank-financed firms. Statistics are equally reported for a sample split of firms that ultimately fail during the court-supervised post-confirmation stage (which takes on 24 months in most cases – see section 2), and those that remain intact.

Panel A: Debt structure at the initiation of the procedure

	Mean	Median	St. Dev.	Min	Max	Number of plans with specific debt
Secured bank debt	0.2577	0.2288	0.2510	0.0000	0.8521	58 out of 89
Unsecured bank debt	0.0238	0.0000	0.0839	0.0000	0.4777	10 out of 89
Trade debt	0.3884	0.3482	0.2351	0.0445	1.0000	89 out of 89
Tax & Social Contributions	0.2610	0.2110	0.2124	0.0000	0.9028	86 out of 89
Owner-Directors	0.0691	0.0000	0.1602	0.0000	0.6753	24 out of 89

Panel B: Debt structure of bank-financed firms

	Mean	Median	St. Dev.	Min	Max	Number of plans with specific debt
Secured bank debt	0.3373	0.3276	0.2357	0.0000	0.8521	58 out of 68
Unsecured bank debt	0.0311	0.0000	0.0949	0.0000	0.4777	10 out of 68
Trade debt	0.3413	0.3144	0.1891	0.0445	0.9726	68 out of 68
Tax & Social Contributions	0.2267	0.1891	0.1706	0.0000	0.6672	66 out of 68
Owner-Directors	0.0636	0.0000	0.1507	0.0000	0.6753	19 out of 68

Panel C: Collateral rights

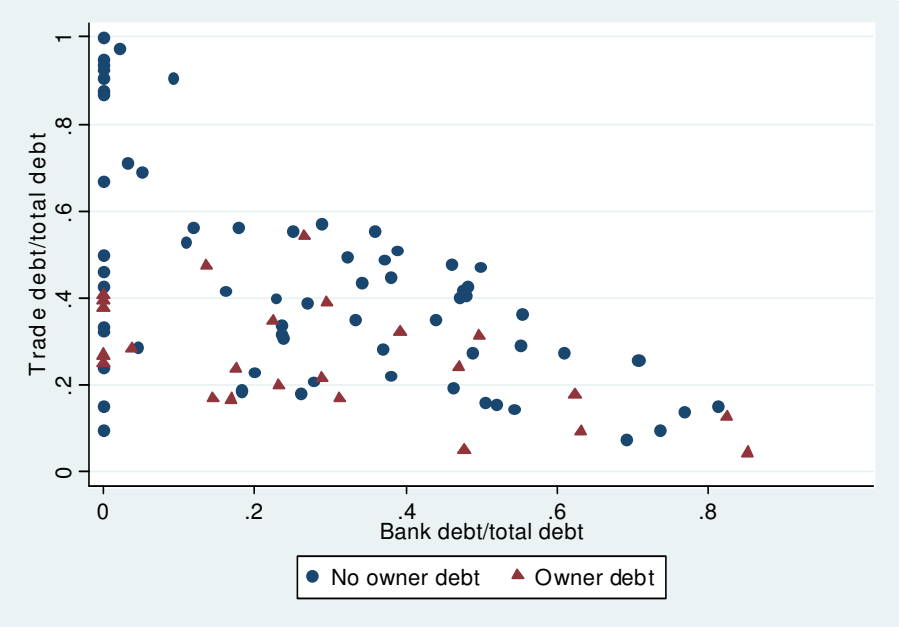
Number of bank-financed firms with . . .	
Both a Fixed and floating charge	36
Only a Fixed charge	1
Only a Floating charge	21
No security	10
Total bank-financed firms	68 (36 + 1 + 21 + 10)
Personal guarantee (in addition to other securities)	13

Panel D: Pre-bankruptcy bank credit flow (Data available for 51 of 61 bank-financed firms)

	Number	Mean	Median	St. Dev.	Min	Max
Pre-bankruptcy credit flow	51	-7.12%	-16.37%	57.20	-100%	287,2%
Sample split:						
Flows for failing firms	25	-10.28%	-18.74%	71.59	-100%	287,2%
Flows for non-failing firms	26	-4.08%	-14.04%	39,99	-46.72%	116.28%

In figure 2, we plot trade credit against bank debt. Both bank debt and trade credit are expressed as a share of total debt at procedure initiation. The figure suggests that, although trade credit and bank debt are substantial lending sources, other sources of debt remain significant. Compared to Franks and Sussman (2005), who indicate that bank debt and trade credit are dominant sources of lending especially for small firms, the debt structure in our sample of small distressed companies is more disperse (i.e. more observations are relatively far removed from the diagonal). Most observations deviate from the diagonal because of outstanding tax and social contributions claims. Some observations away from the diagonal are additionally characterized by owner debt (marked with a triangle).

Figure 2. Bank debt and trade credit as a proportion of firm's total debt (inspired by Franks and Sussman, 2005). The figure shows bank debt and trade credit as a proportion of total debt at the start of the procedure. Total debt includes bank debt, trade credit, outstanding tax and social contributions and owner debt. Each point represents a single company. Firms with owner debt are designated with a triangle.



5. Debt rescheduling

Debt rescheduling is typically at the core of a reorganization plan. The previously reported debt structure is largely rearranged under court-supervised reorganization, by way of debt forgiveness and debt deferral. Within reasonable limits, bankruptcy law should in principle preserve the Absolute Priority Rule. While the Absolute Priority Rule is in general fully respected in liquidation procedures, deviations occur frequently in reorganization proceedings, depending on the legal framework (see e.g. Weiss, 1990). Table 3 shows data on debt rescheduling for a restricted sample of 84 out of 89 small corporations. Missing data or plans drafted for a period of less then 24 months prevent the use of 5 plans[14]. In this restricted sample, all firms have outstanding trade debt, 81 firms owe unsettled tax and social contributions, and respectively 63 firms are bank-financed (53 secured and 10 unsecured).

Deviations from A.P.R. against secured creditors impel their individual consent according to the Belgian legal framework[15]. Debt forgiveness cannot be forced onto these creditors. In panel A we report only one case where a secured bank has forgiven debt. Panel B reports that secured banks and debtor agreed to defer part of the loan repayment until after the court-supervised period of 24 months

[14] Three plans are excluded in table 2 because of missing data on specific variables (on debt deferral). Two other firms spending less then 24 months under court-supervision after plan confirmation are equally removed. This restricts our analysis to firms with a court-supervised post-confirmation stage of 24 months.

[15] According to article 30 of L.C.J. a creditor is secured when he possess a mortgage, floating lien or any security on real property, including creditors benefiting from retention of title clauses. All tax debt has been given the same legal status within the context of reorganization proceeding. Social security contributions are however considered unsecured debt.

for 38 of 53 cases. Those postponed repayments account for 66% of the due bank credit. The due bank credit consists in the principal bank loan repayments within and after the fixed period of 24 months. A mechanism has however been implemented by article 30 L.C.J. to defer principal repayments of secured debt for maximum of 18 months, if no compromise has been reached on the debt rescheduling between debtor and the secured creditor[16]. The secured creditor will however always regain his liquidation rights after 18 months. The debtor is subsequently forced to repay the entire bank debt after those 18 months to avoid asset seizure. Fifteen (53-38) corporations repay their secured bank debt within 24 months most likely after a creditor stay of 18 months according to article 30 L.C.J.

Panel A and B respectively report only one reduced unsecured bank claim and even less deferral of the loan repayment compared to the cases with secured bank debt. Notwithstanding the risky position of unsecured banks, they behave rather tough and unconstructive. This suggests that unsecured bank creditors do not favor reorganization as found in Bris et al. (2006). They argue that pre-bankruptcy negotiations did already occur, and that banks (whether secured or unsecured) have already shown themselves unwilling to compromise.

According to panel A, trade creditors largely bear the burden of alleviating the debt levels. In 58 of the 84 cases, trade creditors undergo a debt reduction, averaging 51 % of the face value of the claim[17]. Tax and social contributions are less subject to debt forgiveness, and if any, the percentage is lower compared to the one of trade credit. The plans clearly show that the social security administration forgives debt in most cases, while that tax authorities do most certainly not. The social security administration is treated as an ordinary creditor under the Belgian reorganization law, while a reduction of the tax claims demands the tax authority's individual consent. The social security administration votes against the restructuring plan in one third of the cases, while trade creditors almost always vote unanimously in favor of the plan.

The initial debtor-proposed plan needs to be executed during a period of maximum 24 months, which is fixed at exactly 24 months for 98% of cases. This implies that the complete repayment of unsecured debt (after debt reduction) should be scheduled within this period. If the original plan cannot be fully enforced, the debtor can however propose an amendment of the plan, resulting in an additional period of maximum 12 months for the execution of this new plan. Conflicting with the Belgian reorganization legislation, we however find that a minority of the initially drafted plans schedule trade and government debt repayments for a period larger than 24 months. Panel B reports that this occurs in 28 cases (41%) for trade debt and 14 cases (30%) for government debt.

Our unreported calculations reveal that the promised repayment percentage for both unsecured trade and government debt averages 73,8% (and 74,4% on median) in our sample of 84 corporations. Bris et al. (2006) find that unsecured creditors do only recover about one-third to one-half of their claims under Chapter 11. Sundgren (1998) reports an average promised repayment of 43% (and 37% on

[16] The bankruptcy documents are too noisy to notice whether an 'effective' agreement between secured banks and debtors is reached.

[17] In regression analysis reported in appendix A, we find that the fraction of debt forgiveness raises with the level of outstanding trade credit.

median) under Finnish reorganization, and shows that the mean (median) repayment period to unsecured creditors is 6,1 (5,5) years. A payoff rate to unsecured creditors of 46,9% is found under Japanese reorganization (Eisenberg and Tagashira, 1994), and repayment terms of 5.8 years (mode is 5.1).

The share of tax and social contributions in total promised payments to unsecured creditors is large under Belgian reorganization because these claims are considerable and are only rarely subject to debt forgiveness. Data limitations on foreign recovery rates for tax and social contributions prevents a comparison with our Belgian data. The Canadian payoff rates for ordinary creditors, which are typically trade creditors, average 44 cents on each dollar of debt (Fisher & Martel, 1994). Our payoff rate to trade creditors averages 64.74%, and 64,49% on median[18]. Distinct data on trade creditor repayments is missing in the above-mentioned U.S., Japanese and Finnish studies. Under the assumption that repayments to prioritized unsecured creditors (like the tax administration) are larger than these to trade creditors, the above-reported percentages for unsecured creditors are upper bounds for the payoff rates to trade creditors. Thus, trade creditors are repaid at most one-third to one-half of their claims in the U.S., 43% in Finland and 46,9% in Japan. We conclude that trade creditors fare very well under Belgian court-supervised reorganization, which suggests that the procedure is friendly to unsecured creditors.

Table 3: Debt restructuring.

Panel A: debt forgiveness						
	Number of cases with debt forgiveness	Mean	Median	St. dev.	Min	Max
Secured Bank debt	1 out of 53	The debt forgiveness is 0.1277				
Unsecured bank debt	1 out of 10	The debt forgiveness is 0.1519				
Trade debt	58 out of 84	0.5106	0.5000	0.2242	0.0178	0.9441
Tax & soc.	19 out of 81	0.2179	0.2061	0.1426	0.0161	0.5883
Owner-debt	3 out of 21	The debt forgiveness is 0.2, 1 and 1				
Panel B: Postponed repayments (in principal) until after the court-supervised post-confirmation stage of 24 months per type of debt claim						
		Repayment of specific debt after 24 months / Total repayments of specific debt within and after 24 months				
	Cases with debt deferral	Mean	Median	St. dev.	Min	Max
Secured Bank debt	38 out of 53	0.6610	0.7058	0.2816	0.0468	1
Unsecured Bank debt	6 out of 10	0.6124	0.6325	0.3690	0.0785	1
Trade debt	28 out of 84	0.4101	0.3692	0.2110	0.0648	1
Tax & soc.	14 out of 81	0.3038	0.3543	0.2106	0.0139	0.6363
Owner-debt	14 out of 21	0.8893	1	0.2867	0.1537	1

Our dataset also suggests a strong bargaining position of the debtor as debt-equity-swaps do not occur and the reorganization procedure never interferes with the interests of the prepetition shareholders. Deviations from A.P.R. in favor of the shareholder are subsequently omnipresent. Even with respect to owner-debt, this applies. As Panel A en B of table 3 show, junior owner-debt is only reduced in 3 of the 21 cases, although it is frequently deferred. Debt forgiveness on owner-debt might be enforced by the introduction of a 'fair and equitable'- standard (as in the U.S.), and equally by the installment of a creditor's committee[19] to represent unsecured creditors.

[18] Our calculations are based on 26 cases without debt reduction and on 58 cases with debt reduction.
[19] A creditor's committee is installed in 20% of the sample cases (45 out of 225) in the study of Bris et al. (2006).

6. Source of trade credit.

6.1. Trade debt theories and pecking order theory for distressed firms.

There is a large theoretical literature that employs incomplete contract theory to analyze various aspects of the capital structure of the firm. This literature studies for example the trade-off between debt and equity, the type of financial claim, the maturity of debt, and the number of creditors[20], but does not address other debt classes like trade debt and government debt. Peterson and Rajan (1997) give a fairly complete overview of the existing trade debt theories. First, suppliers may have an advantage over financial institutions in the assessment of their customers' creditworthiness and the enforcement of due trade debt. Second, trade creditors may have an equity-like stake in the distressed firm, which encourages them to take more risk and contribute to the rescue[21]. It seems to us that the implicit equity stake of trade creditors becomes more persistent when they fear a drastic fall in their sales when the business of their customer would be closed. Third, the accumulation of trade debt may reduce transaction costs, example given if firms postpone payments on trade debt obligations to settle them periodically[22]. Finally, trade credit can be used as a tool for price discrimination because it changes the effective price of goods. The financial advantage theory, the equity-stake theory and the price discrimination theory offer explanations for the supply of trade debt, while the transaction cost theory explains the demand for trade debt.

In addition, the demand of trade credit may also be driven by arguments from the pecking order theory (Myers, 1984). The classical pecking order theory predicts a sequence for financing decisions: firms finance new investments first with internal funds, then with safe debt, then risky debt and finally with outside equity. Adverse selection costs (due to information asymmetries) and transaction costs of issuing risky debt and equity securities induce this hierarchy. Internal funds have no adverse selection problem, while both debt and equity require an adverse selection risk premium. Debt demands a lower risk premium than equity. The nature of the financing sequence of the pecking order theory results in a minimization of the adverse selection premiums and transaction costs. Specifically Peterson and Rajan (1997) argue that internal funds precede trade debt in the pecking order. They find that each additional dollar of profits lowers the demand for trade credit by 23 cents[23].

Peterson and Rajan (1997) find that a firm's ability to generate cash internally decreases its demand for trade credit, and this after controlling for the firm's access to credit from financial institutions. Banks might be reluctant to provide credit to distressed firms without additional and/or liquid collateralized assets, while trade creditors are likely more eager to extend their lending to a distressed firm because of their equity-like stake and their advantage over financial institutions in the assessment of their customers' creditworthiness. We formulate our hypothesis as follows:

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[20] See e.g. Hart & Moore, 1994, 1998; Bolton & Scharfstein, 1996; Berglöf & Von Thadden, 1994, Dewatripont & Tirole, 1994

21 This argument for trade credit supply to distressed firms is put forward in Cunat (2002) and Franks and Sussman (2005).

22 See also Rajan & Zingales (1995) on the transaction cost and financing advantage theories.

[23] Peterson and Rajan (1997) appropriately argue that cash flow rather than profits is the correct variable to test the pecking order theory.

Hypothesis 1: Cash flow precedes trade debt in the pecking order after controlling for a firm's access to credit from financial institutions.

6.2. Empirical analysis.

In table 4 below, we provide estimates of a simple reduced form model in the spirit of Petersen and Rajan (1997) that links the level of trade debt to both demand and supply factors. Trade debt is measured at the start of the procedure, and normalized by pre-bankruptcy assets. All specifications indicate a significantly negative effect of size (Log of total assets). This suggests the presence of a net demand effect, where larger firms have more access to other financing sources (due to limited informational asymmetries) and therefore make less use of trade debt. Peterson & Rajan (1997) argue that large firms demand less trade credit because they have less growth opportunities. Public limited liability firms (D-PLLC) tend to hold more trade debt in all specifications. This suggests that these more transparent firms have better access to trade debt, which is evidence of a net supply effect. The level of current assets on its books (current assets excluding cash/assets) is clearly related to trade debt levels, although its significance is specification sensitive. At first glance, this finding points out that a firm's demand for short-term financing depends on its short-term assets, and will be further discussed in this section. Hart & Moore (1994) and Diamond (1991) present rationales for firms matching the maturity of assets and liabilities. The age of firms (Log of firm age) does not affect the level of trade debt.

To verify whether the supply of trade credit depends on financial health and on the capacity to generate internal money flows, we introduce a number of financial indicators. If we find that trade debt is positively related to financial health, we have support for the financing advantage theories (suppliers lower their trade credit for heavily distressed firms). If we find that trade debt is negatively related to financial health and internal money flow generation, the net demand effect of the pecking order theory dominates (less healthy firms demand more trade debt). In specification 1 we introduce profitability (net profits[24]/assets). The negative coefficient suggests that the higher demand of trade debt by distressed firms dominates the effect of lower supply by the suppliers. In specification 2 we substitute cash flow (cash flow/assets) for profitability as a measure of financial health. Again we find a strongly significant negative relation, supporting the earlier conclusion that more distressed firms demand more trade debt. This finding suggests that trade debt is higher in the "pecking order" than internally generated cash. The estimated cash flow coefficient of -0.2972 implies that each additional euro of cash flow lowers the demand for trade credit by around 30 cents (idem in terms of profit – specification 1). We further examine this finding in this section after controlling for a firm's access to bank debt.

Aspects of both economic and financial distress drive the variables net profits/assets and cash flow/assets. Earning before interests, taxes, depreciation and amortization (EBITDA) is commonly used as a proxy to investigate the degree of economic distress, as it does not reflect differences in debt structure (see Hotchkiss, 1995). This operational cash flow variable is scaled by assets and introduced

[24] Net profit before taxes.

in specification 3. Its estimate is borderline not significant. The explanatory power of the model drops considerably, suggesting that both economic and financial distress, rather than only the former type of distress, drive the level of trade credit in the pre-bankruptcy period[25].

A well-known proxy for financial health is the score of a failure prediction model (see e.g. Altman, 1968; Ohlson, 1980). We use Altman's Z"-score developed for non-publicly traded firms (see Altman, 1993), which as an adjusted version of his initial Z-score for large publicly held corporations. Compared to the original Z-Score model, the revised Z"-Score model replaces the market value of equity by its book value and eliminates the variable Sales/assets. Specification 3 substitutes the Z"-score for cash flow, and we consistently find a negative estimate for the Z"-score.

Specification 5 confirms our previous main findings after controlling for respectively industry effects. Industry dummies are defined as follows: wholesale (23 cases), retail (15 cases), manufacturing (13 cases), hotels and restaurants (9 cases), construction (8 cases), and other industries (21 cases). Other industries are the omitted category. We find that manufacturing firms have significantly lower levels of trade debt[26].

Peterson & Rajan (1997) include proxies for a firm's credit availability and the relationships with financial institutions in their trade credit models. Firms with large unused lines of credit and with strong bank lending relationships demand less trade credit. The relationship with financial institutions has however no effect on the supply of trade credit. Our previous findings on the pecking order might critically depend on the distressed firm's access to bank financing, especially in the bank-based European credit system.

Specification 6 therefore adds the variable Ex-ante leverage defined as total debt/assets, as a painfully high debt ratio might constrain a firm's access to external finance (see Shyam-Sunder and Myers, 1999; see further in section 9). Specification 7 controls for the distressed firm's access to bank debt financing by the variable Ex-ante bank debt (bank debt scaled by assets). 'Ex-ante' explicitly refers that the variables Ex-ante leverage and Ex-ante bank debt are obtained from the latest annual account prior to bankruptcy-reorganization filing. Those variables do not affect the demand for trade credit and previous findings remain robust. The drawback of specification 6 and 7 might be endogeneity concerns.

Cunat (2007) finds that trade credit use is higher in firms with low levels of collateralizable assets as firms with more land and fixed assets have more access to other financing sources. He finds that the economic effect of his collateral variable measured as the book value of land and fixed assets to total assets is particularly strong. In our sample, we find that bank debt is heavily collateralized (see section

[25] Firms with more trade debt did not only suffer marginally from economic distress during the pre-bankruptcy period. This suggests that our sample firms plan are correctly confirmed. So, a so-called type-I error, i.e. unviable firms are allowed to reorganize did likely not occur (White, 1994).

[26] As additional robustness check, we controlled for the time difference between the moment of procedure initiation and the date of the latest annual account. Our findings remain intact (also in the government debt models of section 7).

4). We show in table 1 of appendix B that the ratio of the book value of land and buildings to total assets is a very good predictor of outstanding bank credit. Specification 8 therefore introduces the variable Land and buildings on total assets as a proxy for a firm's access to bank financing. A significant negative coefficient is found with a relatively large coefficient. The difference between the first and third quartiles of our collateral variable is 0.2874 (0.31 in Cunat), which translates into an expected reduction in trade credit use of 7.87% (4.03% in Cunat). In specification 8, the variable Current assets excl. cash/assets is replaced by two specific variables on current assets: Inventories/assets and Receivables/assets. This allows avoiding the simultaneous introduction of the relatively highly correlated variables Current assets excl. cash/assets and Land and buildings/assets. The variables Inventories/assets and Receivables/assets are not significant and the latter has even a negative sign. This suggests that Current assets excl. cash / assets in specification 1 to 7 was largely driven by the collateral variable (likely idem in the study of Peterson and Rajan). Specification 9 replaces cash flow for Z"-score in specification 8 and controls for industry effects. After controlling for a distressed firm's access to bank debt and industry effects, we find that each additional euro of cash flows reduces the demand for trade credit by around 25 cents.

Specification 10 and 11 are two-stage least squares regressions with the variable Bank debt at procedure initiation/assets as instrumented variable. The instrumental variables are discussed in *appendix B*, and include the (1) Land and buildings/assets and (2) a proxy for the variability in the business returns[27] (firms with stable cash flows have more access to bank credit) and (3) the dummy variable Debt personally guaranteed. The coefficient of the variable Bank debt at procedure initiation/assets is marginally significant in specification 10, and becomes insignificant after controlling for industry effects in specification 11. One euro of additional bank debt at procedure initiation results in an expected reduction of trade credit use of around 35 and 33 cent in respectively specification 10 and 11.

Still, trade creditors do not supply trade debt blindly to any firm that demands it. In specification 12 we enrich the supplier's information set with information about the management of the distressed firm. We tracked down the involvement of members of the executive board in earlier bankruptcies in Belgium (Previous bankruptcies) and the experience of the executive board of the distressed firm on the boards of other Belgian firms (Management experience). The former variable counts earlier bankruptcies in which the board of directors has been involved as a director[28][29], while the latter counts all positions on boards ever held by members of the distressed firm's board. The results indicate that trade creditors supply less trade debt to firms whose managers have more bankruptcies on their slate.

[27] We use the industry's variation in profit margin as proxy for the variability in the business returns. The industry's variation in profit margin consists in the industry average of the standard deviation of the operating profit margin over the last 3 fiscal years prior to petition filing. This variable is based on variation in profit margin within businesses over time (i.e. non cross-sectional).

[28] If a firm goes bankrupt two years after management dismissal, we consider the dismissed manager responsible and count it as an involvement in a previous bankruptcy. In Belgium, from a legal point of view, replaced managers even remain responsible for three years after their discharge.

[29] The variables Previous bankruptcies and Altman's Z-score can be considered as proxies for the likelihood of bankruptcy.

Table 4: Determinants of Trade credit/Total assets.

The dependent variable Trade Credit/Total Assets is the firm's trade credit at the start of the procedure scaled by pre-bankruptcy assets. The variables L(total assets) and L(Firm Age) are logarithms of respectively pre-bankruptcy total assets and firm age. The variable D-Public Limited Liability Corporation amounts one when the firm is a Public Limited Liability Corporation, and zero otherwise. The variables Net Profits/assets, Cash flow/assets, EBITDA/assets and Altman's Z"-score for non-publicly traded corporations are proxies for the distressed firm's internal money flow generation and financial health, and those variables are obtained from the latest annual account prior to the filing for bankruptcy-reorganization. Ex-ante leverage and ex-ante bank debt are respectively total debt/assets and bank debt/assts equally obtained from the pre-bankruptcy account. The variable Land and buildings/assets is used as collateral proxy (like in Cunat, 2007) and determines the firm's access to external bank financing. Land and buildings/assets, Current assets excl. cash/assets, Inventories/assets, and Receivables/assets are obtained from the latest annual account prior to bankruptcy-reorganization. The variable Bank debt at procedure initiation/assets is instrumented using a simplified bank debt model described in **appendix B** (specification 6 of table 1 of appendix B). The variables Previous Bankruptcies and Management Experience respectively amount to the number of earlier bankruptcies (of other Belgian firms) in which the board of directors has been involved, and their number of past and current management positions in the board of other Belgian firms. The values in brackets are the robust t-statistics: * / ** / *** significant at 10% / 5% / 1%.

	Spec. 1	*Spec. 2*	*Spec. 3*	*Spec.4*	*Spec. 5*	*Spec. 6*	*Spec. 7*	*Spec. 8*	*Spec. 9*	*Spec. 10*	*Spec. 11*	*Spec. 12*
Financial health and internal money flow generation												
Net profits / assets	-0.2960											
	[-1.97]*											
Cash flow / assets		-0.2972							-0.2471	-0.2945	-0.2526	
		[-2.44]**							[-1.97]*	[-2.77]***	[-2.27]**	
EBITDA / assets			-0.2513									
			[-1.63]									
Altman's Z"- Score				-0.02475	-0.0223	-0.0192	-0.0223	-0.02308				-0.0211
				[-2.71]***	[-2.40]**	[-2.05]**	[-2.61]**	[-2.28]**				[-2.18]**
Access to external funds												
Ex ante Leverage						0.0669						
						[0.79]						
Ex-ante bank debt / total assets							-0.0554					
							[-0.41]					
Land and buildings / total assets (collateral)								-0.2739	-0.2960			
								[-1.73]*	[-1.57]			
Bank debt at procedure initiation / assets										-0.3479	-0.3335	
										[-1.67]*	[-1.20]	
										(instrum.)	(instrum.)	
Controls												
L(Total Assets)	-0.1126	-0.1004	-0.1256	-0.0818	-0.0820	-0.0776	-0.0855	-0.0826	-0.0874	-0.0946	-0.0945	-0.0968
	[-3.63]***	[-3.74]***	[-3.27]***	[-2.46]**	[-2.34]**	[-2.22]**	[-2.76]***	[-2.41]**	[-2.98]***	[-3.32]***	[-3.37]***	[-2.66]***
D-Public Limited Liability Corporation	0.1438	0.1389	0.1645	0.1170	0.1671	0.1717	0.1851	0.1337	0.1980	0.1541	0.2083	0.1103
	[1.67]*	[1.61]	[1.94]*	[1.40]	[2.03]**	[2.07]**	[2.18]**	[1.60]	[2.34]**	[1.79]*	[2.47]**	[1.44]
L(Firm Age)	-0.0265	-0.0403	-0.0187	-0.0443	-0.0654	-0.0070	-0.0655	-0.0222	-0.0399	-0.0422	-0.0604	-0.0028
	[-0.61]	[-0.97]	[-0.40]	[-1.02]	[-1.36]	[-1.50]	[-1.38]	[-0.49]	[-0.90]	[-1.05]	[-1.34]	[-0.06]
Current assets excl. cash/ assets	0.2028	0.1390	0.1750	0.2889	0.2321	0.2343	0.2294					
	[1.64]	[1.12]	[1.46]	[2.33]**	[1.85]*	[1.87]*	[1.88]*					
Inventories / assets								0.2040	0.0237	0.1468	0.0723	0.1493
								[0.94]	[0.09]	[0.66]	[0.28]	[0.74]
Receivables / assets								-0.0419	-0.2651	-0.1841	-0.2623	-0.0717
								[-0.19]	[-1.13]	[-1.10]	[-1.24]	[-0.32]

Continuation of table 4	*Spec. 1*	*Spec. 2*	*Spec. 3*	*Spec.4*	*Spec. 5*	*Spec. 6*	*Spec. 7*	*Spec. 8*	*Spec. 9*	*Spec. 10*	*Spec. 11*	*Spec. 12*
Debtor profile												
Previous Bankruptcies												-0.0896 [-2.49]**
Management Experience												0.0118 [1.01]
Industry dummies	NO	NO	NO	NO	YES	YES	YES	NO	YES	NO	YES	NO
Intercept	0.9393 [5.07]***	0.9427 [5.43]***	1.0605 [5.02]***	0.7491 [3.78]***	0.8709 [4.05]***	0.7804 [3.14]***	0.8415 [4.12]***	0.8819 [4.52]***	1.0995 [6.78]***	1.1044 [7.22]***	1.2109 [6.79]***	0.9648 [4.88]***
No. of observations	89	89	89	89	89	89	89	89	89	89	89	89
R-squared	0.2750	0.3107	0.2497	0.3499	0.3872	0.3901	0.3922	0.3461	0.3840	0.3099 (Centered R2)	0.3675 (Centered R2)	0.3889

7. Source of government debt.

In a companion paper (Leyman, Schoors, Coussement; 2008), we find that the 'mandatory' repayment of government debt increases the likelihood of transfer to bankruptcy-liquidation during the post-confirmation stage[30][31]. Clearly, the level of unsecured debt and especially this of government debt critically determine the fate of distressed firms after plan confirmation. Therefore, we are interested in the forces that determine the level of government debt.

In table 5 we provide estimates of a simple reduced form model of government debt. Government debt is measured at the initiation of the procedure and scaled by pre-bankruptcy assets. It consists mainly in value added taxes (sales tax), income taxes, and payroll taxes. Firms that add more value, book more profit and pay a higher payroll are ceteris paribus expected to pay more taxes and contributions to the government. Given this higher flow of tax payments, these firms have a higher access to government debt in times of distress since they can always finance themselves by not paying what they owe the government. In the U.S., Baird et al. (2007) argue that small distressed firms have less incentives to transfer sales taxes and payroll taxes in the running up to bankruptcy. This practice of accumulating payable taxes and social contributions might be very persistent in Belgium as entrepreneurs and managers are not personally liable for overdue tax and social contributions, which might result in an almost mechanical supply effect of government debt. Specifically we expect that untransferred value added tax and payroll tax are at the core of this supply mechanism as the large majority of our distressed firms do not pay income taxes.

In specification 1 we control for the mechanical supply effect by introducing payroll costs scaled by assets (payroll costs/assets). Payroll costs/assets is positively related to government debt and is highly significant. This strongly suggests that firms with considerable payroll have more access to government debt by not transferring payroll taxes to the social security administration. These payroll costs contribute to the firm's added value to the extent that they are incorporated in the price of the goods and services delivered by the distressed firm. The more added value, the more value added tax (VAT – sales tax in Europe) that needs to be transferred to the tax administration, and the more opportunity to accumulate government debt. Specification 2 introduces Added value[32] excluding payroll costs/assets to fully control for a firm's added value. After exclusion of payroll costs from the gross added value of the firm's business operations, the nominator mainly consists of operating profit (or loss) and the value of depreciations and amortizations on business assets. In line with our supply considerations, we expect a positive coefficient for Added value excluding payroll costs/assets, as more added value results in more access to government debt (value added tax). We find an insignificant coefficient. As Added value excl. payroll costs/assets is closely related to profitability (note that its correlation with Net profits/Assets is 0.9094), the found negative estimate suggests that

[30] The ratio of government debt/total debt for failing firms during the court-supervised post-confirmation stage averages 0.2199 (N = 44 of 89), while it only averages 0.3031 for firms that remain intact during this period (N = 45 of 89). Those differences in mean are significant at the 5% level (based on two-tailed t-test). Medians are respectively 0.1392 and 0.2583.

[31] Fisher & Martel (1995, 2004) equally show that the full repayment of prioritized government claims lower the likelihood of plan confirmation under the Canadian system.

[32] Definitions of added value differ. We employ gross added value of the business operations (see further).

the supply effect (due to VAT) may be dominated by an opposite demand effect: more profitable firms may have higher access to government debt, but they need it less and the latter effect dominates the former. Specification 3 substitutes Net profits/Assets for Added value excl. payroll costs/assets. The coefficient is again not significant, which suggests a mixed supply and demand effect[33].

In specification 1 to 3, we identified that the levels of government debt are driven by a mechanical supply effect of payroll and sales taxes. In the remainder of this section, we specifically test the following hypothesis:

Hypothesis 2: Cash flow precedes government debt in the pecking order theory for distressed firms.

This hypothesis is tested after controlling for a distressed firm's mechanical supply effect of government debt and its access to credit from financial institutions. It should be noted that it is unlikely that firms finance long-term projects with government debt. After all, penalties and increments on non-transferred or unsettled taxes and social contributions may reach high levels in Belgium. Still, it could be that distressed firms 'demand' government funds to finance the current assets (inventories for example) that are essential to temporary business continuation. As previously argued, the slow reaction of the tax and the social contribution administrations to overdue payments is not very likely to impede the supply of government debt. Specification 4 till 12 show that the level of current assets (current assets excluding cash/assets - including the variable on Inventories/assets in specification 10 to 12) is positively related to the government debt levels, although not significantly. Still, this finding suggests there may be a net-demand effect for government claims during the pre-bankruptcy period to finance short-term projects.

Specification 4 to 7 add proxies for the distressed firm's internal money flow generation. Clearly, the ability to generate money flows does not affect a distressed firm's access to government debt. Specification 8 to 11 introduce our previously defined proxies for a firm's access to external finance and bank debt. The collateral variable (Land and buildings/assets) and the instrumented variable Bank debt at procedure initiation/assets do not significantly affect the level of government debt. In unreported regression analysis (available on demand), we noticed that our findings are robust to industry effects.

In contrast with hypothesis 2, we find no evidence that entrepreneurs demand government debt to finance their loss-making business. In addition, the estimate of Payroll costs/Assets remains unaffected after controlling for a firm's ability to generate cash flows and its access to credit from financial institutions, which suggests a persistently mechanical supply effect of government debt.

[33] The found estimate for Payroll costs/assets suggests the presence of a mechanical supply effect of government debt. However, if firms have more payrolls, they might be less profitable, and demand more government debt to finance their loss-making business (the correlation between Payroll costs/assets and Net profits/Assets is -0.3194). After controlling for this demand effect by Net profits/assets in specification 4, we find that the coefficient estimate of Payroll costs/assets remains unchanged, which confirms our earlier conclusion on the dominant supply effect of government debt measured by Payroll costs/assets.

Finally, in specification 12 we control for the reputation and the experience of the distressed firm's management by introducing the variables on previous bankruptcies and management experience (see previous section for details). Managers with an existing bankruptcy record clearly accumulate more government debt during the pre-bankruptcy period. The significantly negative coefficient for management experience may indicate that more experienced managers are cautious not to harm their business reputation by accumulating arrears on government debt. This behavior is sensible in the Belgian context. Although the absence of personal liability rules offers the opportunity to exploit the government as a lender of last resort, this business tactic is not without cost. Belgian credit scoring models employed by banks and large trade creditors routinely use arrears on government debt as one of the main predictors of imminent failure[34]. It is hardly surprising then that experienced managers avoid arrears on their government debt if they can.

[34] The models sold by market leader Graydon for example use arrears on government debt as a central variable in their models.

Table 5: Determinants of Government debt/total assets.

The dependent variable Government Debt/Total Assets is the firm's government debt at the start of the procedure scaled by pre-bankruptcy assets. The variable Payroll costs/assets, Added value excl. payroll costs/assets, Net Profits/assets, Cash flow/assets, EBITDA/assets, and Altman's Z"-score for privately held firms are obtained from the latest annual account prior to the filing for bankruptcy-reorganization. Ex-ante leverage and ex-ante bank debt are respectively total debt/assets and bank debt/assets equally obtained from the pre-bankruptcy account. The variable Bank debt at procedure initiation/assets is instrumented using a simple bank debt model described in appendix B (specification 6 of table 1 of appendix B). We refer to table 4 with respect to the other independent variables. The values in brackets are the robust t-statistics:* / ** / *** significant at 10% / 5% / 1%.

	Spec. 1	*Spec. 2*	*Spec. 3*	*Spec. 4*	*Spec. 5*	*Spec. 6*	*Spec. 7*	*Spec. 8*	*Spec. 9*	*Spec. 10*	*Spec. 11*	*Spec. 12*
Supply of government debt												
Payroll costs /assets	0.4435	0.4396	0.4544	0.4476	0.4308	0.4374	0.4277	0.4237	0.4042	0.4121	0.4122	0.4725
	[4.19]***	[3.92]***	[3.95]***	[3.79]***	[3.65]***	[3.74]***	[3.98]***	[4.03]***	[3.51]***	[3.48]***	[3.72]***	[4.91]***
Added value excl. payroll costs / assets		-0.0164										
		[-0.19]										
Financial health and internal money flow generation												
Net profits/assets			0.0280	0.0316								
			[0.32]	[0.33]								
Cash flow/assets					-0.0320					-0.0454	-0.0459	-0.0391
					[-0.42]					[-0.53]	[-0.55]	[-0.52]
EBITDA/assets						0.0046						
						[0.05]						
Altman's Z"- Score							-0.0026	0.0035	-0.0027		-	
							[-0.50]	[0.36]	[-0.50]			
Access to external funds												
Ex-ante leverage								0.1265				
								[0.80]				
Ex-ante bank debt/assets									-0.1113			
									[-0.91]			
Land and buildings / assets (collateral)										-0.0806		
										[-0.66]		
Bank debt at procedure initiation / assets											-0.0914	
											[-0.66]	
											(instrum.)	
Debtor profile												
Previous Bankruptcies												0.0713
												[3.00]***
Management Experience												-0.0214
												[-3.81]***
Controls												
L(Total Assets)	-0.0841	-0.0841	-0.0846	-0.0848	-0.0804	-0.0831	-0.0786	-0.0744	-0.0737	-0.0789	-0.0819	-0.0629
	[-4.70]***	[-4.70]***	[-4.63]***	[-3.34]***	[-3.44]***	[-3.48]***	[-3.09]***	[-3.30]***	[-2.90]***	[-2.92]***	[-3.31]***	[-2.74]***
D-PLLC				0.0176	0.0049	0.0121	0.0026	0.0182	0.0023	0.0051	0.0081	0.0790
				[0.23]	[0.07]	[0.17]	[0.04]	[0.24]	[0.03]	[0..08]	[0.13]	[1.17]
Current Assets excl. cash/ assets				0.1293	0.1247	0.1309	0.1401	0.1322	0.1096			
				[1.20]	[1.18]	[1.20]	[1.25]	[1.12]	[0.91]			

Inventories / assets										0.1074 [0.62]	0.1233 [0.80]	0.1132 [0.76]
Continuation of table 5	*Spec. 1*	*Spec. 2*	*Spec. 3*	*Spec. 4*	*Spec. 5*	*Spec. 6*	*Spec. 7*	*Spec. 8*	*Spec. 9*	*Spec. 10*	*Spec. 11*	*Spec. 12*
Receivables / assets										0.0012 [0.01]	0.0076 [0.04]	0.0296 [-0.16]
Industry dummies	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Intercept	0.6817 [5.36]***	0.6822 [5.36]***	0.6879 [5.23]***	0.6083 [3.90]***	0.5849 [3.95]***	0.5962 [4.05]***	0.5625 [3.41]***	0.4003 [1.99]**	0.5938 [3.32]***	0.6382 [4.49]***	0.6690 [4.62]***	0.5472 [4.25]***
No. of observations	89	89	89	89	89	89	89	89	89	89	89	89
R-squared	0.3536	0.3540	0.3547	0.3691	0.3698	0.3678	0.3706	0.3896	0.3772	0.3666	0.3724 (Centered R2)	0.4567

8. Pre-bankruptcy debt dynamics.

The reduced form models estimated in previous sections explain large parts of the variation in the levels of trade debt (see table 4) and government debt (see table 5). Distressed firms clearly finance their loss making business during the pre-bankruptcy period with trade credit. Government debt is mechanically supplied during the pre-bankruptcy period regardless of the firm's ability to generate cash flows and its overall access to credit from financial institutions. This raises the question why distressed firms demand government debt in the first place? In this section, we further explore pre-bankruptcy debt dynamics induced by the entrepreneurs and the different creditors to answer this question. Specifically entrepreneurs may accumulate overdue taxes and social contributions to settle the claims of creditors more essential to business continuation, like trade creditors and financial institutions. Together with the relatively slow reaction of the government to overdue payments[35], this entrepreneurial behaviour may turn the government into a passive lender of last resort in the Belgian context. Hence our third hypothesis:

Hypothesis 3: Government administration acts as lender of last resort if other creditors contract their lending in the running up to petition filing.

Table 6: A classification of pre-bankruptcy debt flows.

This table shows the frequency of the various combinations of pre-bankruptcy debt dynamics based on the credit flow signs of trade credit, bank debt and government debt during the pre-bankruptcy period. We calculate credit flows during the pre-bankruptcy period as difference between the volume of debt reported in the reorganization plan and the volume of debt reported in the latest annual account prior to petition filing for court-supervised reorganization.

		$GROWTH_{1-2}$ GOVERNMENT DEBT				Row Total
		Contraction		Expansion		
		$GROWTH_{1-2}$ TRADE DEBT		$GROWTH_{1-2}$ TRADE DEBT		
		Contraction	Expansion	Contraction	Expansion	
$GROWTH_{1-2}$ BANK DEBT	Contraction	CAT 1 7	CAT 2 7	CAT 3 24	CAT 4 15	53 (59,6%)
	Expansion	CAT 5 2	CAT 6 8	CAT 7 13	CAT 8 7	30 (33,7%)
	Status quo	CAT 9 1	CAT 10 2	CAT 11 1	CAT 12 2	6 (6,7%)
Column Total		10 (11,2%)	17 (19,1%)	38 (42,7%)	24 (27,0%)	89 (100%)

We calculate pre-reorganization debt flows as difference between the volume of debt reported in the reorganization plan and the volume of debt reported in the latest annual account prior to court-supervised reorganization. If we consider trade debt, bank debt and government debt flows in both directions, i.e. positive or negative, we can distinguish 8 debt flow combinations in table 6. Only 6 cases had no bank debt reported in both the latest annual account and in the petition filing at the

[35] The slow reaction of government administration may be strengthened by information asymmetries between government and the private market creditors involved. Specifically it cannot be excluded that well-informed creditors withdraw their lending in the running up to petition-filing for bankruptcy-reorganization.

moment of procedure initiation (i.e. the 6 'status quo' cases in table 6)[36]. Table 6 shows the frequency of these pre bankruptcy debt flow combinations. Government debt expands for 62 of the 89 firms, which is not surprising given the absence of personal liability for unpaid taxes and social contributions. In 24 cases (27% of the sample, category 3) banks and trade creditors withdraw their lending while the government debt expands.

Calculations in Panel A of table 7 show that government debt is more likely to expand if banks contract their lending (73.6% vs. 69.7%) and if trade creditors reduce their outstanding debt (79.2% vs. 69.7%). If both trade and bank creditors contract their lending, the probability of a government expansion is 77.4% (D.1 in panel A). The probability of government debt expansion drastically drops if bank and trade creditors are more eager to supply credit in the running up to petition filing (D.2 to D.4 in increasing order of trade and bank creditor's willingness to supply credit). Our analysis suggests that managers of distressed firms choose to substitute government debt for other debt sources. We cannot reject hypothesis 3 that the government administration acts as lender of last resort.

Table 7: Unconditional and conditional probabilities of debt expansion

This table employs the rule of Bayes to calculate unconditional and conditional probabilities of debt expansion

Description of debt dynamic	Likelihood
Panel A	
A. Probability (Government debt expansion)	69,7%
B. Probability (Government debt expansion | bank debt contraction)	73,6%
C. Probability (Government debt expansion | trade debt contraction)	79,2%
D1. Probability (Government debt expansion | bank and trade contraction)	77,4%
D2. Probability (Government debt expansion | bank and/or trade contraction)	75,7%
D3. Probability (Government debt expansion | bank and/or trade expansion)	66,1%
D2. Probability (Government debt expansion | bank and trade expansion)	46,7%
Panel B	
Probability (Bank debt expansion)	33,7%
Probability (Trade debt expansion)	46,1%
Panel C	
Probability (Bank debt expansion | trade debt contraction)	31,3%
Probability (Trade debt expansion | bank debt contraction)	41,5%
Panel D	
A. Firms liquidated in bankruptcy during the court-supervised post-confirmation stage (44 of 89)	
Probability (Bank debt expansion | trade debt contraction)	24,0%
Probability (Trade debt expansion | bank debt contraction)	41,9%
B. Firms that remain intact during the court-supervised post-confirmation stage (45 of 89)	
Probability (Bank debt expansion | trade debt contraction)	39,1%
Probability (Trade debt expansion | bank debt contraction)	40,9%

[36] 21 cases have no bank debt at the moment of procedure initiation (see section 4). 6 of those 21 cases had no bank debt reported in the latest annual account prior to bankruptcy-reorganization, while 15 cases did repay the bank credit during the pre-bankruptcy period.

Panel B of table 7 shows that banks expand their lending in respectively 33,7% during our above defined pre-bankruptcy period. Panel D of table 2 (see section 4) even shows that only 30% of the banks expand their funds during a pre-bankruptcy period of 12 months (data provided by intermediation of the National Bank of Belgium). These findings clearly suggest that banks withdraw their funds in the running up to judicial composition, although they do not withdraw more funds when the distressed firm is ultimately liquidated (as shown in section 4). This seems to be evidence of a banks' liquidation preference.

Trade creditors expand their outstanding claims for 46,1% of the cases (see panel B of table 7). They are seemingly more willing to provide credit compared to banks. The rationale therefore might be their equity-like stake in the distressed firm. Franks and Sussman (2005) find for U.K. distressed firms that banks tend to contract their debts at the same time as trade creditors expand theirs. Table 6 does not provide support for a substitution of trade credit for bank debt (as discussed by Franks and Sussman), nor support for the opposite substitution. Bank debt contracts to the detriment of other debt sources in 15 cases (16,9% in category 6), while trade debt contracts to the detriment of other debt sources also in 13 cases (14,6% in category 7). A comparison of the probabilities of trade credit expansion in panel B and C in table 7 shows that trade credit is not more expanded if banks contract (46.1% vs. 41.5%), nor do banks extend their lending more if trade creditors contract (33.7% vs. 31.3%). We analyze the substitution effect of trade credit for bank debt in more detail in section 9.

More specifically, Franks & Sussman (2005) find that banks rarely extend their lending to companies that ultimately fail, while trade creditors do[37]. Panel D provides some evidence that banks tend to extend less credit when trade credit shrinks and firms ultimately fail.

[37] They observe this pattern of substitution of trade debt for bank debt in distressed U.K. firms that entered the 'business support unit' (BSU) of a bank. The objective of the 'BSU' is to turn around the company and 'send it back to branch', though the rescue process may also end in bankruptcy.

9. Robustness checks on our models of trade credit and government debt.

9.1. Controlling for debt capacity.

The empirical literature on the pecking order theory offers contradictory evidence[38][39]. Lemmon and Zender (2007) however find that the pecking order appears to be a good description of financing behavior after controlling for a firm's "debt capacity". Debt capacity was originally defined by Myers (1977) as the point at which an increase in the use of debt reduces the total market value of a firm's debt. Lemmon and Zender (2007) interpret the existing literature that refers to the concept of debt capacity, and they argue that the debt capacity of a firm is reached if the costs of financial distress curtail further debt issues. Shyam-Sunder and Myers (1999) argue that firms find ways to add equity – i.e. the last resort in the pecking order - when debt ratios are painfully high (implicitly also in Fama and French, 2005).

According to Lemmon and Zender (2007), the combination of debt capacity and the pecking order theory suggests that the costs of adverse selection are dominant for "low to moderate" leverage levels but that tradeoff-like forces become primary motivators of financing decisions at "high" levels of leverage. Those so-called tradeoff-like forces refer to the tradeoff theory (that competes with the pecking order theory) to explain the financing decisions of firms in modern corporate finance literature. The tradeoff theory of capital structure predicts that firms choose their mix of debt and equity to balance the benefits and costs of debt. Tax benefits of borrowed money and the control of free cash flow problems are argued to increase the use of debt, while the costs of financial distress and conflicts between debt holders and equity provides firms with incentives to limit their debt financing. A value-maximizing firm equates benefit and costs at the margin. At high levels of leverage, the costs of financial distress typically curtail further debt issue. Lemmon and Zender (2007) argue that the use of debt capacity makes it more difficult to distinguish between the pecking order theory and the tradeoff theory.

The empirical implementation of the debt capacity concept is however not obvious. Lemmon and Zender's main measure for debt capacity is based on the probability a firm has rated debt outstanding. Firms with rated debt are able to access the public market. They argue that such firms have cash flows that are sufficiently stable, sufficiently large pools of existing collateral, and sufficient informational

[38] The literature on the pecking order theory especially focuses on the financing decisions of public quoted American firms. Helwege and Liang (1996) examine the financing of firms that went public in 1983, and more specifically analyze their discrete financing decisions between 1984 and 1992. Their results conflict with the traditional pecking order theory. First, they find that the probability of obtaining external funds is unrelated to the shortfall in internally generated funds (although firms with greater cash surpluses tend to avoid raising external funds). Second, firms that access the capital markets do not follow the pecking order when choosing the type of security to offer (equity, private debt or public bonds). Using a small sample of 157 corporations that traded continuously between 1971 and 1989, Shyam-Sunder and Myers (1999) test the static tradeoff model against the alternative pecking order theory. Their findings strongly favor the pecking order model of corporate financing (in their sample of mature corporations). Frank and Goyal (2003) analyze a broad cross-section of publicly traded firms from 1971 to 1998, and find that large firms exhibit some aspects of pecking order behavior. Small firms that face more informational asymmetries do surprisingly not follow the pecking order.

[39] See Barclay et al. (2006) and Manigart and Van Acker (2007) on capital structure and high growth ventures.

transparency to allow access to relatively large amounts of arms-length debt. Firms with rated debt in principle have an unconstrained debt capacity, while firms without rate are assumed to be constrained by debt capacity considerations. They indeed find that firms with a more restricted debt capacity depend more on external equity financing instead of debt financing. Equity is the last resort for firms with constrained debt capacity.

Most of our distressed small firms have undeniably reached the borders of their debt capacity[40]. Our dataset offers unique opportunities to distinguish distressed firms with 'very critical' and 'less critical' debt capacity. A distressed firm's debt capacity is revealed by the bank behavior in the running up to bankruptcy-liquidation. Specifically a 'large' bank debt contraction during the pre-bankruptcy period reveals a distressed firm with heavily constrained debt capacity. We expect that cash flow precedes trade debt and/or government debt in the pecking order of well-defined subsamples of distressed firms with tight debt capacity, while this pecking order sequence might be less prevalent in subsamples of distressed firms with relatively less-constrained debt capacity (hypothesis 1 and 2). In addition, we will test hypothesis 3 in a subsamples where both trade and bank creditors contract their lending in the running up to petition filing.

9.2. Trade and government debt models and debt capacity constraints.

If financial institutions did contract their lending in the running up to bankruptcy-reorganization, we expect that a distressed firm's debt capacity is more constrained compared to cases with a bank credit expansion. A comparison between the last available accounting data and the bank debt reported in the plan reveals that banks reduced their credit for 53 cases, while additional credit was provided for 30 cases (see also in table 6). In panel A of table 8 and in the 53-case subsample with bank debt contraction, we find that trade credit is negatively and significantly related to the internal money flow generation of the distressed firm. A positive but insignificant estimate for the internal funds variables is found in the subsample with bank debt expansion cases. Our findings suggest that trade debt precedes cash flow in the pecking order if the distressed firms debt capacity tends to be constrained.

Data provided by intermediation of the National Bank of Belgium reveals more detailed information on the exact size of the bank debt contraction during a 12-month pre-bankruptcy period, but for a more limited number of firms. If banks contract a significant part of their credit, the distressed firm's debt capacity is heavily constrained, while it is only moderately constrained with limited bank credit contractions. We noticed that banks contract their lending during a 12-month pre-bankruptcy period for 37 out of 51 cases (we have data on 51 cases – see section 4). The median pre-bankruptcy contraction (-22,8%) is employed as cut-off point to define a subsample with large contractions (18 out of 37) and one with small contractions (19 out of 37). In the subsample with large bank credit contractions, we find a large and significant estimate for the internal fund proxies, which suggests that cash flow precedes trade debt in the pecking order especially for heavily debt-constrained distressed

[40] This might specifically occur if banks are unwilling to provide credit to heavily distressed firms as the marginal cost of financial distress exceeds any benefits of debt financing in the classical tradeoff decision.

firms. Positive but insignificant estimates for the internal fund variables are found in the subsample with small bank credit contractions.

Under tight bank debt capacity constraints, our findings suggest that cash flow precedes trade debt in the pecking order (hypothesis 1). Contrary to the rough analysis in section 7, our more detailed analysis suggests that bank debt is substituted for trade credit - i.e. a one-way substitution of trade debt for bank credit. We are however not able to analyze the effect of internal money flow generation on the levels of bank debt in a subsample of trade credit contraction during the pre-bankruptcy period, because of data limitations. Therefore, it cannot be rejected that the substitution runs in both directions.

Panel A of table 9 on government debt uses identical subsamples than those of panel A of table 8 on trade debt. In both subsamples, we find that the levels of government debt are not significantly related to the internal money flow generation of a distressed firm. Our findings in the 53-case subsample with bank credit contraction are of utmost interest as they confirm that cash flow does not precede government debt in the pecking order for bank-debt constrained firms (related to hypothesis 2). In addition, the coefficient estimate for the variable Payroll costs/assets in the subsample with bank credit contraction is large[41] and significant, which is not the case in the competing subsample with bank credit expansions. This suggests that taxes are not transferred to government administration if banks contract their credit[42]. Government is used as lender of last resort and we cannot reject hypothesis 3.

If both trade creditors and financial institutions contract their credit, we expect that the distressed firm's debt capacity is fully exhausted. We specifically expect that government acts as lender of last resort if both trade creditors and banks contract (hypothesis 3). A comparison between the last available accounting data and the debt reported in the plans reveals that a creditor's run by creditors of the private market takes place with 31 out of 89 cases (see CAT 1 and CAT 3 of table 6). In panel B of table 9, we find that Payroll costs/assets turns highly significant, and coefficient estimates are larger than before (compare with panel A of table 9). This suggests that the mechanical supply effect of government debt plays under debt contraction by both trade and bank creditors. We can clearly not reject hypothesis 3.

Using our data provided by the National Bank of Belgium, we estimated government debt models in a subsample with large contractions (18 out of 37) and in a subsample with small contractions (19 out of 37). The subsamples are identical as those used in panel B of table 8. Our specifications estimated in the subsample with large bank credit contractions are however not significant (based on the p-values - Prob > F).

[41] The coefficients of the variable Payroll costs/assets in the 53-case subsample with bank contraction are larger than those estimated in the full 89-case sample (see table 5 of section 7).
[42] The variable Number of employees is significant in the subsample with bank credit expansion. The coefficient estimates do however not differ significantly with those in the subsample with bank credit contractions.

Table 8: Does cash flow precedes trade credit in the pecking order after controlling for a distressed firm's debt capacity?

The dependent variable Trade Credit/Total Assets is the firm's trade credit at the start of the procedure scaled by pre-bankruptcy assets. In panel A, we expect that a firm's debt capacity is more constrained under a bank credit contraction than under a bank credit expansion. A comparison between the last available accounting data prior to petition filing and the bank debt reported in the plans reveals that banks reduced their credit for 53 cases, while additional credit was provided for 30 cases (see also in table 6). Panel B employs data provided by intermediation of the National Bank of Belgium to define subsamples with large and small bank credit contractions during a 12-month pre-bankruptcy period. If banks contract a significant part of their credit, the distressed firm's debt capacity is heavily constrained, while it is only moderately constrained with limited bank credit contractions. A credit contraction occurs with 37 firms (out of 51 cases on which we have data), and the median contraction is used as cut-off point to define a subsample with large contractions (18 cases) and one with small contractions (19 cases). The values in brackets are the robust t-statistics:* / ** / *** significant at 10% / 5% / 1%.

Panel A	*Bank credit contraction*				*Bank credit expansion*			
	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Internal funds								
EBITDA / assets	-0.3334			-0.3220	0.1811			0.1667
	[-3.05]***			[-3.03]***	[0.97]			[0.93]
Net profits assets		-0.1996				0.1568		
		[-2.99]***				[0.77]		
Cash flow / assets			-0.2627				0.1667	
			[-2.06]**				[0.76]	
Controls								
L(total assets)	-0.0987	-0.0963	-0.0927	-0.0913	-0.0925	-0.0937	-0.0935	-0.0534
	[-2.98]***	[-3.02]***	[-2.94]***	[-2.95]***	[-3.17]***	[-2.88]***	[-2.85]***	[-1.54]
Previous bankruptcies	-0.0489	-0.0486	-0.0536	-0.0521	-0.0846	-0.0866	-0.0861	-0.0656
	[-1.61]	[-1.54]	[-1.72]*	[-1.69]*	[-2.24]**	[-2.10]**	[-2.09]**	[-1.93]*
Land and buildings / assets				-0.1876				-0.3512
(bank debt collateral)				[-1.36]				[-1.57]
Intercept	1.0619	1.0020	1.0028	1.0422	1.0045	1.0373	1.024	0.8260
	[4.62]***	[4.58]***	[4.64]***	[4.66]***	[4.17]***	[3.50]***	[3.57]***	[3.77]***
Number of obs.	53	53	53	53	30	30	30	30
R-squared	0.3185	0.2913	0.2848	0.3300	0.1428	0.1413	0.1405	0.1883
Prob > F	0.0032***	0.0034***	0.0112**	0.0073***	0.0037***	0.0033***	0.0029***	0.0041***
Panel B	*Large bank credit contraction*				*Small bank credit expansion*			
	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Internal funds								
EBITDA / assets	-0.6609			-0.6890	0.1307			0.1288
	[-4.18]***			[-4.11]***	[0.96]			[0.90]
Net profits assets		-0.6306				0.0153		
		[-2.26]**				[0.15]		
Cash flow / assets			-0.5738				0.0550	
			[-5.41]***				[0.51]	
Controls								
L(total assets)	-0.1014	-0.0670	-0.0753	-0.1078	-0.1258	-0.1228	-0.1252	-0.1229
	[-3.82]***	[-2.06]*	[-3.61]***	[-3.81]***	[-3.54]***	[-3.16]***	[-3.25]***	[-3.81]***
Previous bankruptcies	0.0193	0.0380	0.0216	0.0195	-0.0773	-0.0732	-0.0752	-0.0752
	[0.83]	[1.10]	[1.21]	[0.84]	[-3.65]***	[-3.57]***	[-3.58]***	[-3.02]***
Land and buildings / assets				0.1799				-0.0290
(bank debt collateral)				[0.89]				[-0.28]**
Intercept	1.03337	0.7138	0.8079	1.0473	1.2238	1.1936	1.2171	1.2095
	[6.11]***	[3.43]***	[5.79]***	[5.96]***	[4.59]***	[4.01]***	[4.13]***	[4.78]***
Number of obs.	18	18	18	18	19	19	19	19
R-squared	0.6918	0.5208	0.7481	0.7099	0.5701	0.5486	0.5531	0.5714
Prob > F	0.0024***	0.1342	0.0003***	0.0075***	0.0007***	0.0011***	0.0012***	0.0021***

Table 9: Government debt models in subsamples with different debt capacity constraints.

The dependent variable Government Debt/Total Assets is the firm's government debt at the start of the procedure scaled by pre-bankruptcy assets. In panel A, we expect that a firm's debt capacity is more constrained under a bank credit contraction than under a bank credit expansion. We refer to panel A of table 8 for a definition of the different subsamples. In panel B, both banks and trade creditors contract their lending in the running up to petition filing, which suggests for an exhausted debt capacity position. This situation of a creditor's run by creditors of the private market occurs for 31 out of 89 distressed firms (see CAT 1 and CAT 3 of table 6).

Panel A	*Bank credit contraction*				*Bank credit expansion*			
	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Internal funds								
EBITDA / assets	-0.0527				-0.1630			
	[-0.45]				[-1.14]			
Net profits assets		-0.0744				-0.0841		
		[-0.76]				[-0.86]		
Cash flow / assets			-0.0548	-0.0530			-0.1481	-0.1539
			[-0.49]**	[-0.47]*			[-0.25]	[-1.23]
Controls								
L(total assets)	-0.0919	-0.0923	-0.0919	-0.0893	-0.1007	-0.1030	-0.0999	-0.0949
	[-3.64]***	[-3.63]***	[-3.63]***	[-3.56]***	[-5.01]***	[-5.02]***	[-4.90]***	[-4.01]***
Payroll costs / assets	0.4889	0.4792	0.4708	0.4617	-0.0111	0.0414	0.0009	0.0090
	[3.36]***	[3.25]***	[3.05]***	[2.95]***	[-0.07]	[0.29]	[0.01]	[-0.06]
Land and buildings / assets				-0.0819				-0.0487
(collateral)				[-0.56]				[-0.43]
Intercept	0.7493	0.7416	0.7491	0.7468	0.8318	0.8228	0.8124	0.7930
	[4.09]***	[4.05]***	[4.09]***	[4.02]***	[5.68]***	[5.69]***	[6.61]***	[5.22]***
Number of obs.	53	53	53	53	30	30	30	30
R-squared	0.4537	0.4572	0.4543	0.4565	0.5758	0.5595	0.5743	0.5769
Prob > F	0.0001***	0.0000***	0.0002***	0.0001***	0.0000***	0.0002***	0.0001*	0.0004***

Panel B	*Bank and trade credit contraction: a creditor's run*			
	Spec. 1	Spec. 2	Spec. 3	Spec. 4
Internal funds				
EBITDA / assets	0.0897			
	[0.34]			
Net profits assets		-0.0226		
		[-0.11]		
Cash flow / assets			0.1153	0.1153
			[0.48]	[0.47]
Controls				
L(total assets)	-0.1286	-0.1235	-0.1286	-0.1286
	[-3.98]***	[-4.15]***	[-4.08]***	[-3.99]***
Payroll costs / assets	0.6549	0.6147	0.7174	0.7171
	[5.34]***	[4.03]***	[3.64]***	[3.54]***
Land and buildings / assets				-0.0019
(collateral)				[-0.01]
Intercept	0.9543	0.9251	0.9496	10.9497
	[4.23]***	[4.21]***	[4.34]***	[4.25]***
Number of obs.	31	31	31	31
R-squared	0.6178	0.6133	0.6216	0.6216
Prob > F	0.0000***	0.0000***	0.0000***	0.0002***

10. A legal rationale for high government debt in Belgium.

Specific legislation on personal liability for tax and social contributions is absent in Belgium. Therefore, entrepreneurs can exploit government to those creditors that are essential for the continuation of the business activity, namely banks and trade creditors. Banks can seize their contractual right, and sell the collateral attached to the debt. Trade creditors can stop supplying of goods and services, but they may also have an equity-like stake in the survival of the firm. Our results show that firms tend to accumulate government debt to pay bank debts and trade creditors.

Third party liability of firm officers and directors for unpaid taxes and social contributions differs across countries (see B.G. Morgan with respect to tax claims, 2000). In the United States, federal laws and the Bankruptcy Code provide in personal liability with respect to certain types of tax claims and other specific debts[43]. Baird & Morrison (2005) argue that entrepreneurs take into account personal tax liability by opting for Chapter 11, because it provides a better chance of reaching a compromise on their tax obligations[44]. The Canadian legislator prescribes director liability with respect to tax and social contributions. This might drive the low percentage (only a few percentages) of government debt during court-supervised reorganization in Canada (Fisher & J. Martel, 1995). In the U.S., this percentage amounts to 7,3% on average (Baird, Bris & Zhu, 2007), while it averages approximately 26% in Belgium (see table 2)[45].

Baird, Bris and Zhu (2007) show that small firms have a relatively high percentage of tax and social security priority claims compared to larger firms under court-supervised reorganization. They use a sample of 139 firms[46] that emerge from Chapter 11, and in principle, a plan is confirmed for those firms. They find that American owner-managers of small companies are more likely to use government debt as informal financing mechanism than larger companies. The authors argue "owner-managers are more likely to succumb to temptation. They invade the trust funds in the hope that their business is only facing temporarily is only facing temporary cash flow problem and they can replace the money before it is missed". In table 10 we show a similar pattern in our Belgian sample as smaller corporations (among our sample of small corporations) tend to have a higher ratio of government debt to total debt, although our relationship is not perfectly monotonic. Still, our percentages outperform the American ones, most likely due to the lack of personal liability rules.

[43] See also the Stigma reports of the European Commission (2001-2005) – Best Project on Restructuring, Bankruptcy, and a Fresh start.
[44] Tax obligations in the U.S. typically include social security taxes.
[45] The American, Canadian and Belgian tax debt percentages cannot be unconditionally compared as the priority character and the extent of government claims may differ among countries.
[46] Their sample is similar than this of Bris, Welch and Zhu (2006). Baird, Bris and Zhu (2007) however analyse only the firms that did succeed (i.e. firms that are dismissed and converted during the pre-confirmation stage are not included).

Table 10: Government debt to total liabilities.

The table compares government debt under court-supervised reorganization in the United States and Belgium. Size classes are expressed in $ for Chapter 11 firms and in € for Belgian firms[47].

	Chapter 11				*Belgian Law on Judicial composition*			
			Cond. on claim > 0				Cond. on claim > 0	
Pre-Bankruptcy assets . . .	N	Perc.	N	Perc.	N	Perc.	N	Perc.
Smaller than 100K	9	26,7%	7	39,7%	12	28,6%	12	28,6%
Between 100K and 200K	8	16,1%	5	25,7%	13	37,8%	13	37,8%
Between 200K and 500K	24	7,2%	17	10,6%	18	32,5%	17	34,4%
Between 500K and 1000K	21	6,9%	14	10,3%	17	22,6%	15	25,6%
Between 1000K and 2000K	10	10,2%	6	18,3%	16	16,5%	16	16,5%
Between 2000K and 5000K	23	5,8%	13	10,3%	13	19,8%	13	19,8%
Larger than 5000K	44	2,1%	19	4,9%	N/A			
Only Public Companies	11	2,8%	3	10,1%	N/A			
Total	139	7,3%	81	12,8%	89	26,1%	86	27,0%

In this paper we have reported that excessive levels of government debt adversely affect survival probabilities of firms that filed for court-supervised reorganization. One might argue that this perverse effect of the access to government debt may be avoided by enacting personal liability rules on tax and social contributions. This would render the option of institutional debt more expensive and therefore urge the entrepreneur to file earlier for judicial composition (or bankruptcy-liquidation)[48], with possible positive effects on the reorganization outcome. On the other hand, more stringent rules on personal liability may also strengthen the stigma on bankruptcy and discourage risk-taking and entrepreneurship[49]. Therefore, the ultimate effect of more stringent liability rules on economic welfare remains unclear.

11. Concluding remarks.

Our paper starts with a profound overview of the debt composition of Belgian small distressed firms attempting to reorganize under Belgian court-supervision. The debt composition mainly consists of bank debt, trade credit, and due taxes and social contributions. Unsecured claims accounts for more than 70% of the outstanding debt. Those debt level variables contain information on the pre-bankruptcy dynamics. First, we find that small distressed corporations accumulate trade credit to finance their loss-making business during the pre-bankruptcy period. This finding is consistent with the pecking order theory, and we controlled for a distressed firm's debt capacity and access to bank financing. Second, we identified an almost mechanical supply effect of the tax and social security administration acting as lender of last resort during the pre-bankruptcy period. This latter practice is clearly objectionable. The alteration of personal liability rules might be recommended to remedy this problem. Personal liability rules for taxes and social contributions would render the access to government debt more costly and therefore make debt substitution in the pre-bankruptcy period less attractive and likely force the entrepreneur to file earlier for court-supervised restructuring. The ultimate effect of more stringent liability rules on economic welfare remains vague. Therefore we

[47] The American sample of 139 firms consists of firms with confirmed plans.
[48] See Adler et al. (2006) and Donoher (2004) on delay incentives.
[49] See Fan and White (2003) for the impact of personal liability on the level of entrepreneurial activity.

suggest the establishment of a mechanism to encourage the government administration to collect its overdue debts more actively.

Appendix A.

Table 1 of appendix A

The dependent variable is the promised payment to trade creditors divided by the outstanding amount of trade credit. The debt variables are trade debt/assets, government debt/assets and bank debt/assets. All debt amounts are measured at procedure initiation. Earning before interests, taxes, depreciation and amortization (EBITDA) scaled by assets is obtained from the latest annual account prior to petition filing for bankruptcy-reorganization, and is used as proxy for the expected operational cash flows to repay the promised debt during confirmed plan execution. Specification 3 is estimated in a sample restricted to 63 firms with debt reduction in our sample of 89 firms. The values in brackets are the robust t-statistics: * / ** / *** significant at 10% / 5% / 1%.

	Spec. 1	*Spec. 2*	*Spec. 3*
Trade credit/assets	0.1740	0.1966	0.1632
	[1.86]*	[2.45]**	[4.01]***
Government debt/assets	-0.0838	-0.0638	0.0112
	[-0.80]	[-0.56]	[0.09]
Bank debt/assets	0.0303	0.0390	0.0083
	[0.36]	[0.44]	[0.12]
EBITDA/assets		0.0722	0.0548
		[0.70]	[0.62]
L(assets)	0.0769	0.0810	0.0747
	[3.37]***	[3.59]***	[3.91]***
Intercept	-0.1733	0.2120	-0.0385
	[-1.02]	[-1.27]	[-0.28]
No. of observations	89	89	63
R-squared	0.1524	0.1586	0.1697

Appendix B.

Bank debt financing: a simple model.

Financial contracts critically depend on the liquidation value of the pledged assets (see e.g. Hart & Moore, 1994, 1998; Berglöf & Von Thadden, 1994). The creditor's willingness to provide credit increases with the pool of collateralizable assets. Less-specialized assets are preferred as collateral to avoid 'fire sales' because of illiquid markets upon liquidation (Schleifer & Vichny, 2002). Berger et al. (1996) find that less specialized assets results in more liquidation option value per dollar of book value. Land and buildings are typically considered as very redeployable assets because of their less-specialized nature[50].

We expect that more bank debt is attracted when firms have more land and buildings on their balance sheets. In specification 1 of table 1 of this appendix, we regress the book value of land and buildings on the bank's loan size (both variables scaled by pre-bankruptcy assets). The book value of real estate is reported in the pre-bankruptcy accounts and the outstanding bank debt is measured at the moment of imitation of the bankruptcy-reorganization procedure. We control for pre-bankruptcy assets. The empirical findings of specification 1 are in line with our expectations. Specification 2 shows that Machinery and equipment/Assets has no effect on the outstanding bank credit.

Creditors are reluctant to provide credit when a distressed firm's profit and cash flow realization is highly uncertain (see e.g. Lemmon & Zender, 2007). After all, creditors bear the full risk if the distressed business ultimately fails, and they need to share the potential business surplus value with the shareholders. Specification 3 controls for uncertainty by introducing the variation in the industry's profit margin[51] and the industry attrition rate. The latter rate is the proportion of small businesses within a particular industry that file a petition for bankruptcy-liquidation each year (see Morrison, 2007). We also introduce EBITDA/assets in specification 3. We find that firms with more variation in the industry's profit margin significantly attract less bank credit.

Asymmetric information reduces the willingness of creditors to provide credit. Firm age is used as a measure of the informational transparency of a firm, whereby older firms are expected to be more transparent. Specification 4 introduces the logarithmic value of the age of a firm, i.e. the variable L(firm age). We surprisingly find that older firms have lower levels of bank debt. Specification 5 shows that firms older than 20 years have less bank financing, while young firms (< 5 years) do not suffer from informational asymmetries.

Specification 6 adds the dummy variable D-Debt personally guaranteed that amounts 1 if the entrepreneur provided a personal guarantee to the bank (13 out of 89 cases). This dummy variable is significantly positive as expected. Specification 6 is used to *instrument* the level of bank debt at the

[50] Ronen & Sorter (1972) classify land and buildings as less specialized than other fixed assets.

[51] The industry's variation in profit margin consists in the industry average of the standard deviation of the operating profit margin over the last 3 fiscal years. This variable is based on variation in profit margin within businesses over time (i.e. non cross-sectional – based on 3-digit Nace codes).

moment of procedure initiation (scaled by pre-bankruptcy assets) in our trade and government debt models of section 6 and 7.

Table 1 of appendix B

The dependent variable is bank debt at the moment of initiation of the procedure scaled by total assets. The independent variables Land and buildings/assets, Machinery and equipment/assets, total assets, EBITDA/assets are obtained from the latest pre-bankruptcy fiscal accounts prior to petition filing. The industry's variation in profit margin consists in the industry average of the standard deviation of the operating profit margin over the last 3 fiscal years. This variable is based on the variation in profit margin within businesses over time (i.e. non cross-sectional). The variable Industry attrition rate is the proportion of small businesses within a particular industry that file a petition for bankruptcy-liquidation each year. The dummy D-Debt personally guaranteed amounts one if the entrepreneur provided a personal guarantee to the bank, and zero otherwise. The values in brackets are the robust t-statistics: * / ** / *** significant at 10% / 5% / 1%.

	Spec. 1	*Spec. 2*	*Spec. 3*	*Spec. 4*	*Spec. 5*	*Spec. 6*
Book value of land and buildings / assets	0.5168	0.5182	0.5137	0.5308	0.5363	0.3840
	[3.89]***	[3.89]***	[3.62]***	[4.41]***	[4.52]***	[2.35]**
Book value machinery and equipment / assets		0.0812				
		[0.54]				
Industry variation in profit margin			-0.0200	-0.0236	-0.0296	-0.0186
			[-1.72]*	[-2.28]**	[-2.73]***	[-2.35]**
Industry Attrition Rate			0.0405			
			[0.55]			
EBITDA / assets			-0.0485			
			[-0.42]			
L(Firm age)				-0.0587		
				[-1.99]**		
D - Old firm (>20 years)					-0.2109	
					[-2.61]**	
D - Young firm (< 5 years)					0.0294	
					[0.47]	
D-Debt personally guaranteed						0.2115
						[1.67]*
Controls						
L(assets)	-0.0024	-0.0016	-0.0175	-0.0074	-0.0140	
	[-0.13]	[-0.08]	[-0.79]	[-0.33]	[-0.67]	
Intercept	0.2383	0.2271	0.3737	0.5070	0.4674	0.3041
	[1.85]*	[1.70]*	[1.72]*	[2.71]***	[2.47]**	[5.08]***
No. of observations	89	89	89	89	89	89
R-squared	0.1430	0.1443	0.1860	0.2034	0.2327	0.2338

Appendix C: summary statistics

	Mean	*Median*	*Std. Dev.*
Debt composition variables (debt reported in confirmed plans)			
Trade credit / assets	0.4543	0.3919	0.3954
Government debt/assets	0.2995	0.1994	0.3028
Financial health and internal money flow generation			
Net profits / assets	-0.2364	-0.1008	0.3714
Cash flow / assets	-0.2036	-0.0443	0.4613
EBITDA / assets	-0.0711	0.0220	0.3479
Altman's Z"- Score	-2.9480	-1.3366	6.5827
Access to external funds			
Ex ante Leverage	1.2035	1.0539	0.4709
Ex-ante bank debt / total assets	0.3284	0.3143	0.2528
Land and buildings / total assets (collateral proxy)	0.1453	0	0.2177
Bank debt at procedure initiation / assets	0.2990	0.2407	0.2942
Controls			
L(Total Assets)	6.1229	6.3333	1.3698
D-Public Limited Liability Corporation	0.5056	1	0.5028
L(Firm Age)	2.1005	2.1963	0.8386
Current assets excl. cash/ assets	0.5789	0.5999	0.2737
Inventories / assets	0.1934	0.1520	0.1941
Receivables / assets	0.2404	0.2161	0.2166
Debtor profile			
Previous Bankruptcies[52]	0.5618	0	1.0220
Management Experience[53]	4.0449	2	5.1652
Supply of government debt			
Payroll costs /assets	0.2991	0.2380	0.3005
Added value excl. payroll costs / assets	-0.0405	0.0270	0.3442

[52] Maximum is 5
[53] Maximum is 27

Appendix D: correlation matrix of variables used in table 4 (trade credit model)

	S1	*S2*	*S3*	*S4*	*S5*	*S6*	*S7*	*S8*	*S9*	*S10*	*S11*	*S12*	*S13*	*S14*	*S15*	*S16*	*S17*
S1	1,0000	-0,3405	-0,4299	-0,2654	-0,4646	0,3937	-0,1695	-0,3085	-0,1653	-0,3562	0,0335	-0,1608	0,1870	0,0296	-0,1264	-0,2005	0,0101
S2	-0,3405	1,0000	0,8619	0,8869	0,8677	-0,4894	0,0469	0,1385	-0,0222	0,0763	-0,1778	-0,0270	-0,0116	0,1420	0,1433	0,0523	-0,0812
S3	-0,4299	0,8619	1,0000	0,7256	0,7693	-0,5500	0,1637	0,1534	0,0767	0,1606	-0,1046	-0,0742	-0,1567	0,1111	0,0788	0,0191	-0,0386
S4	-0,2654	0,8869	0,7256	1,0000	0,7628	-0,3576	0,0661	0,1046	-0,0283	-0,0129	-0,2019	-0,0268	-0,0725	0,0667	0,0417	0,0185	-0,0978
S5	-0,4646	0,8677	0,7693	0,7628	1,0000	-0,6831	0,0418	0,1358	0,0599	0,2200	-0,0798	-0,0182	0,0997	0,2265	0,3020	0,0502	-0,0102
S6	0,3937	-0,4894	-0,5500	-0,3576	-0,6831	1,0000	0,2458	-0,2191	0,0099	-0,3159	-0,1259	0,0891	-0,0173	-0,0947	-0,1733	-0,0823	-0,1589
S7	-0,1695	0,0469	0,1637	0,0661	0,0418	0,2458	1,0000	0,4003	0,5423	0,2768	0,1073	0,0688	-0,3425	-0,1020	-0,2274	0,0227	0,0345
S8	-0,3085	0,1385	0,1534	0,1046	0,1358	-0,2191	0,4003	1,0000	0,3780	0,3866	0,1545	0,2045	-0,5253	-0,1741	-0,2585	0,0205	0,0192
S9	-0,1653	-0,0222	0,0767	-0,0283	0,0599	0,0099	0,5423	0,3780	1,0000	0,1365	0,0899	-0,0689	-0,2320	-0,0100	-0,1343	-0,0787	-0,0922
S10	-0,3562	0,0763	0,1606	-0,0129	0,2200	-0,3159	0,2768	0,3866	0,1365	1,0000	0,4994	0,3387	-0,1226	0,0615	0,0972	0,0310	0,3353
S11	0,0335	-0,1778	-0,1046	-0,2019	-0,0798	-0,1259	0,1073	0,1545	0,0899	0,4994	1,0000	0,0610	-0,0043	0,0392	0,0863	0,0601	0,4550
S12	-0,1608	-0,0270	-0,0742	-0,0268	-0,0182	0,0891	0,0688	0,2045	-0,0689	0,3387	0,0610	1,0000	0,0634	0,0038	0,1569	0,0069	-0,1206
S13	0,1870	-0,0116	-0,1567	-0,0725	0,0997	-0,0173	-0,3425	-0,5253	-0,2320	-0,1226	-0,0043	0,0634	1,0000	0,4833	0,4486	0,0884	0,0241
S14	0,0296	0,1420	0,1111	0,0667	0,2265	-0,0947	-0,1020	-0,1741	-0,0100	0,0615	0,0392	0,0038	0,4833	1,0000	-0,0587	-0,1099	-0,0154
S15	-0,1264	0,1433	0,0788	0,0417	0,3020	-0,1733	-0,2274	-0,2585	-0,1343	0,0972	0,0863	0,1569	0,4486	-0,0587	1,0000	0,0119	0,0607
S16	-0,2005	0,0523	0,0191	0,0185	0,0502	-0,0823	0,0227	0,0205	-0,0787	0,0310	0,0601	0,0069	0,0884	-0,1099	0,0119	1,0000	0,4042
S17	0,0101	-0,0812	-0,0386	-0,0978	-0,0102	-0,1589	0,0345	0,0192	-0,0922	0,3353	0,4550	-0,1206	0,0241	-0,0154	0,0607	0,4042	1,0000

S1: Trade credit /Assets (dependent variable)
S2: Net profits / assets
S3: Cash flow / assets
S4 : EBITDA / assets
S5 : Altman's Z"- Score
S6 : Ex ante Leverage
S7: Ex-ante bank debt / total assets
S8: Land and buildings / total assets (collateral)
S9: Bank debt at procedure initiation / assets
S10: L(Total Assets)
S11: D-Public Limited Liability Corporation
S12: L(Firm Age)
S13: Current assets excl. cash/ assets
S14 : Inventories / assets
S15: Receivables / assets
S16: Previous Bankruptcies
S17: Management Experience

Appendix E: correlation matrix of variables used in table 5 (government debt models)

	S1	*S2*	*S3*	*S4*	*S5*	*S6*	*S7*	*S8*	*S9*	*S10*	*S11*	*S12*	*S13*	*S14*	*S15*	*S16*	*S17*	*S18*
S1	1,0000	0,4574	-0,1125	-0,1389	-0,2627	-0,1396	-0,1880	0,2987	-0,3322	-0,2936	-0,1898	-0,4005	-0,1568	0,1910	0,0394	0,0596	0,0696	-0,2359
S2	0,4574	1,0000	-0,2070	-0,3194	-0,3281	-0,3161	-0,1547	0,1272	-0,2769	-0,1865	-0,1003	-0,0457	0,0291	0,0624	-0,0247	0,2133	-0,0244	0,1477
S3	-0,1125	-0,2070	1,0000	0,9094	0,7480	0,9372	0,7800	-0,3613	0,0775	0,0978	-0,0324	0,0094	-0,2257	-0,0991	0,0354	0,1001	0,0216	-0,1038
S4	-0,1389	-0,3194	0,9094	1,0000	0,8619	0,8869	0,8677	-0,4894	0,0469	0,1385	-0,0222	0,0763	-0,1778	-0,0116	0,1420	0,1433	0,0523	-0,0812
S5	-0,2627	-0,3281	0,7480	0,8619	1,0000	0,7256	0,7693	-0,5500	0,1637	0,1534	0,0767	0,1606	-0,1046	-0,1567	0,1111	0,0788	0,0191	-0,0386
S6	-0,1396	-0,3161	0,9372	0,8869	0,7256	1,0000	0,7628	-0,3576	0,0661	0,1046	-0,0283	-0,0129	-0,2019	-0,0725	0,0667	0,0417	0,0185	-0,0978
S7	-0,1880	-0,1547	0,7800	0,8677	0,7693	0,7628	1,0000	-0,6831	0,0418	0,1358	0,0599	0,2200	-0,0798	0,0997	0,2265	0,3020	0,0502	-0,0102
S8	0,2987	0,1272	-0,3613	-0,4894	-0,5500	-0,3576	-0,6831	1,0000	0,2458	-0,2191	0,0099	-0,3159	-0,1259	-0,0173	-0,0947	-0,1733	-0,0823	-0,1589
S9	-0,3322	-0,2769	0,0775	0,0469	0,1637	0,0661	0,0418	0,2458	1,0000	0,4003	0,5423	0,2768	0,1073	-0,3425	-0,1020	-0,2274	0,0227	0,0345
S10	-0,2936	-0,1865	0,0978	0,1385	0,1534	0,1046	0,1358	-0,2191	0,4003	1,0000	0,3780	0,3866	0,1545	-0,5253	-0,1741	-0,2585	0,0205	0,0192
S11	-0,1898	-0,1003	-0,0324	-0,0222	0,0767	-0,0283	0,0599	0,0099	0,5423	0,3780	1,0000	0,1365	0,0899	-0,2320	-0,0100	-0,1343	-0,0787	-0,0922
S12	-0,4005	-0,0457	0,0094	0,0763	0,1606	-0,0129	0,2200	-0,3159	0,2768	0,3866	0,1365	1,0000	0,4994	-0,1226	0,0615	0,0972	0,0310	0,3353
S13	-0,1568	0,0291	-0,2257	-0,1778	-0,1046	-0,2019	-0,0798	-0,1259	0,1073	0,1545	0,0899	0,4994	1,0000	-0,0043	0,0392	0,0863	0,0601	0,4550
S14	0,1910	0,0624	-0,0991	-0,0116	-0,1567	-0,0725	0,0997	-0,0173	-0,3425	-0,5253	-0,2320	-0,1226	-0,0043	1,0000	0,4833	0,4486	0,0884	0,0241
S15	0,0394	-0,0247	0,0354	0,1420	0,1111	0,0667	0,2265	-0,0947	-0,1020	-0,1741	-0,0100	0,0615	0,0392	0,4833	1,0000	-0,0587	-0,1099	-0,0154
S16	0,0596	0,2133	0,1001	0,1433	0,0788	0,0417	0,3020	-0,1733	-0,2274	-0,2585	-0,1343	0,0972	0,0863	0,4486	-0,0587	1,0000	0,0119	0,0607
S17	0,0696	-0,0244	0,0216	0,0523	0,0191	0,0185	0,0502	-0,0823	0,0227	0,0205	-0,0787	0,0310	0,0601	0,0884	-0,1099	0,0119	1,0000	0,4042
S18	-0,2359	0,1477	-0,1038	-0,0812	-0,0386	-0,0978	-0,0102	-0,1589	0,0345	0,0192	-0,0922	0,3353	0,4550	0,0241	-0,0154	0,0607	0,4042	1,0000

S1: Government debt/Assets (dependent variable)
S2: Payroll costs/assets
S3: Added value excl. payroll costs/assets
S4: Net profits / assets
S5: Cash flow / assets
S6 : EBITDA / assets
S7 : Altman's Z"- Score
S8 : Ex ante Leverage
S9: Ex-ante bank debt / total assets
S10: Land and buildings / total assets (collateral)
S11: Bank debt at procedure initiation / assets
S12: L(Total Assets)
S13: D-Public Limited Liability Corporation
S14: Current assets excl. cash/ assets
S15 : Inventories / assets
S16: Receivables / assets
S17: Previous Bankruptcies
S18: Management Experience

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