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Debt concentration of European Firms

Caterina Giannetti[1]

31st March 2015

Abstract

This paper investigates the level of debt specialization across European firms relying on a cross-country comparable sample of manufacturing firms. We find that a number of firm characteristics – such as firm size and age – help predict the firm composition of the various types of debts (i.e. debt specialization) but not the level of each debt share. In particular, we observe that small and young firms have a more concentrated debt structure (i.e. they rely on few types of debt). However, these relationships are not linear and seem to be U-shaped. We also find that Spanish firms have the most diversified debt structure, and that diversified firms are less likely to experience a severe reduction in turnover.

Keywords: Debt specialization, European firms, Firm financing

JEL Classification: F20; G32.

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1 Introduction

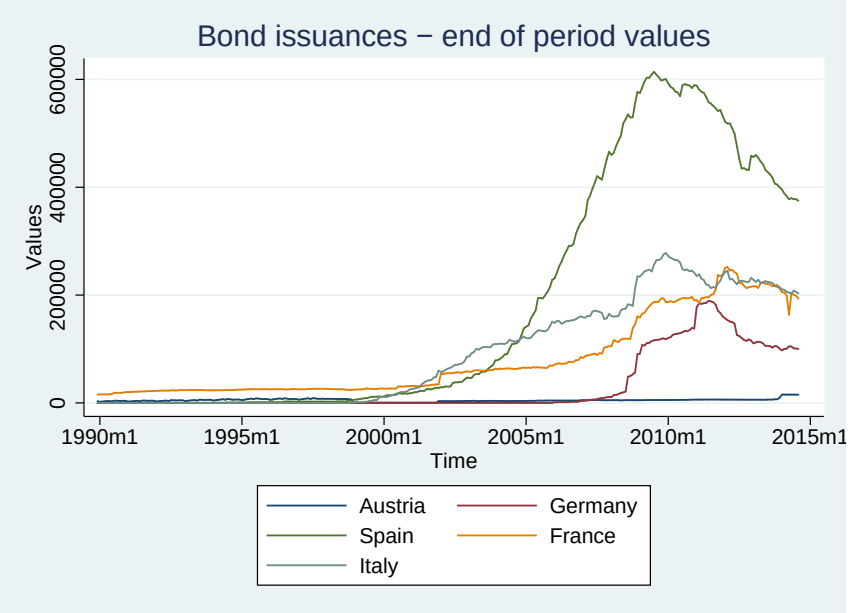
Traditionally bank loans constitute the main source of debt financing for the majority of European firms. As the recent financial crisis has shown, European firms are thus more vulnerable when bank lending tightens. A well developed bond market may therefore represent an alternative source of funding for the real economy when credit squeezes. If a firm can easily access external capital markets and/or switch to alternative sources of funding, the risk of being affected by a negative shocks experienced by its bank-loan providers is notably reduced (see Aoki and Nikolov (2012); De Fiore and Uhlig (2012)).

Indeed, in the recent years, debt capital markets seem to be growing in Europe: issuance of non-financial corporations has boomed in Europe (see Figure (1)), and surpassed for the first time in the crisis year 2009 US issuances (see (Kaya et al., 2013)). Despite such an increase in bond issuances, bonds may remain a fairly exclusive funding instrument (see, for example, Denis and Mihov (2003)). Thus, establishing whether this trend is governed by the users of capital or by the suppliers of capital has important policy implications and it has recently attracted the attention of several scholars (see, for example, Custódio et al. (2013)).

The majority of these studies, however, consider only a few types of debts (for example, bank-loans vs bonds, or short-term vs long-term bonds). In reality, firms rely on a variety of sources of funding. In this regard, the present paper contributes to this policy debate in three ways. First, we document the pattern of correlations between firm characteristics and debt structure across seven European countries (Austria, France, Germany, Hungary, Italy, Spain, and the United Kingdom). The second contribution of this paper is an analysis at a firm level of the determinant of debt specialization (i.e. of the use of various types of debt), along with an attempt to identify which part of it is driven by demand factors. The third contribution is to provide evidence on the (causal) relationship between firm debt concentration and firm turnover reduction.

The question of debt specialization is relatively new and only few papers has investigated it, and – to best of our knowledge – no paper has investigated it for European firms. We can only mention Rauh and Sufi (2010) and Colla et al. (2013), both of which focus on firms located in the USA. Rauh and Sufi (2010) show that there are differences in the choice of borrowing sources between small and large firms, and between firms with high and low credit ratings. In particular, high-credit quality firms tend to use few tiers of capital, whereas low-quality credit firms tend to use several tiers of capital. However, they rely on a small samples of non-financial rated firms. Colla et al. (2013) investigate the determinants of the debt specialization for both rated and non-rated firms. They find that small (unrated) and opaque firms tend to rely on a fewer types of debt, while large rated and profitable firms borrow from a multiple sources of debt. However, they cannot clearly distinguish among possible drivers of debt specialization as they cannot clearly identify which firms in their sample are financially constrained. In this paper we make a further step by investigating the determinant of debt specialization identifying clearly financially constrained firms and exploiting the cross-country-sectional variation in

Figure 1: **Bond issuance in Europe**



Source: Bank of Italy

our sample.

This paper is also related to the growing literature studying the capital structure variation and the determinant of debt maturity structure, also known as "granularity of corporate debt." It is well known that short-term debt have several disadvantages. For firms without access to other funds to meet debt repayments, short-term debt can for example lead to early firm liquidation (see Diamond (1991)). However, a recent strand of the literature suggests that firms manage multiple bond issues with different times maturities to mitigate rollover risk and debt overhang (Choi et al. (2013); Diamond and He (2014)). For example, Choi et al. (2013) show that it is less costly for a firm to be exposed to small rollover risks at two points in time rather than being exposed to a large rollover risk at one point in time. They also document a substantial variation in debt granularity among firms. That is, a large number of firms have a highly dispersed maturity structures, while others have a low dispersed maturity structure. They finally document that firm debt becomes more granular during economic downturns (when rollover risks are higher). We contribute to this debate by considering various types of debt with different maturities.

In the following, we first examine the composition of debt structure across European countries and the correlation between debt specialization and firm characteristics. We find that the share of short-term bank loans is higher in Spain, Hungary and Italy compared to Germany, though in Spain firms rely more on long-term securities. In all countries, however, the share of securities remain fairly low. We also find that a number of firm characteristics – such as firm size and age – help predict the firm composition of these types of debts (i.e. debt specialization). Specifically, we observe that small and young firms have a more concentrated debt structure (i.e. they rely on few types of debt). These relationships, however, are not linear and

seem to be U-shaped. We also observe that more opaque firms have a less concentrated structure. Among these group of European countries, Spanish and German firms have the most diversified debt structure.

We then investigate the determinant of each debt share. Interestingly we find that, apart from each country characteristics, only a few (but distinct group) of firm characteristics help explain the level of each debt share. In particular, being listed on the stock-market now seems to explain the share of short and long-term bank debt, whereas doing R&D (i.e. our proxy for more opaque firms) does not affect any type of debt share. Always controlling for financial constrained firms, we also find again that firms in Italy, Spain and Hungary rely on a greater share of short-term bank loans. We conclude that firm age and size seem to significantly affect the way firms combine the different types of debt but not the level of each debt share, while being listed in the stock market seems to only affect the level of the share of bank debt (both short-term and long-term). Spanish and German firms have the most diversified debt structure.

Further, we investigate whether the different level of debt concentration of European firms is a result of supply or demand-side factors. To do that, we compare in each country financially constrained firms with non-financially constrained firms (to control for the supply effect of bank loans) versus the same difference for firms located in Germany (to control for the demand effect in the securities market). We find that firms located in Spain chose to rely on the most diversified debt structure, though the effect is not economically sizeable.

Finally, we study the relationship between firm debt concentration and turnover reduction. Relying on IV-setting, we find that firms with a more diversified debt structure are less likely to experience a severe reduction in turnover.

The remainder of the paper is structured as follows: Section 2 introduces the dataset used in the current study and analyze the debt structure in each European countries. Section 3 relies on multivariate regressions to relate firm characteristics to debt specialization of firm, while Section 5 investigates the demand and supply-side factors of debt specialization on firms. Section 6 studies the relationship between firm debt concentration and turnover reduction. Finally, Section 6 summarizes and concludes our argument.

2 Data description.

In this paper, we rely on the recently released EFIGE dataset collected within the project "European Firms In a Global Economy: internal policies for external competitiveness".[1] The dataset covers a representative and cross-country comparable sample of manufacturing firms across seven European countries: Austria, France, Germany, Hungary, Italy, Spain, the UK. The data are fully comparable across countries, since it is derived from responses to the same questionnaire. The sampling design follows a stratification by industry, region and firm size structure. To allow adequate statistical inference appropriate sample weights will then be used in the

[1] See www.efige.org and Altomonte and Aquilante (2012).

following analysis.

The EFIGE survey includes a wide range of questions which allow us to build both qualitative and quantitative variables on firms' characteristics and activities (e.g. proprietary structure of the firm; R&D investment, internationalization). Some of these questions refer to 2008, whereas others ask for information related to 2009 compared to years 2008/2007 (see Table (1) and (3) for a full description of the firm characteristics we will use). This dataset provides more than just balance-sheet information and enables us to address important issues related to the firm financing. Specifically, in relation to firm debt structure, the dataset allows us to collect the share of bank-loans and securities – both short-term and long-term – along with the share of other financial instruments (see Table (2)). In particular, the dataset also allow us to have information on financial constrained firms, as firms are directly asked whether they applied for a bank loan, and if so, if their demand was successful or rejected. We can also clearly distinguish between listed and non-listed firms (see again Table (3)). These variables are important since they allow us to clearly distinguish between different hypotheses for debt specialization.

The EFIGE dataset shows some interesting phenomena concerning the sources of funding of European firms. Some of them are well known phenomena. Specifically, if we analyze firm debt structure, we can see that in bank-based countries (Italy, Spain and Austria) the share of bank debt is quite high, whereas in market-based countries (United Kingdom and France) the share of debt securities is much larger (see the value of these shares in panel 1 and 2 of Figure (2)). However, we can also observe that the share of short-term bank loans and securities is higher in Spain, Hungary and Italy compared to Germany, whereas the share of long-term bank loans is lower. In Spain, however, firms can rely on a larger share of long-term securities. In addition, in all these countries, the shares of debt securities remain fairly low (see panel 2 of Figure ((2)). Moreover, if we consider all types of debts together according to their maturities (see panel 3 of Figure (2)), we can see that in Hungary and Italy there is a higher share of short-term debt.

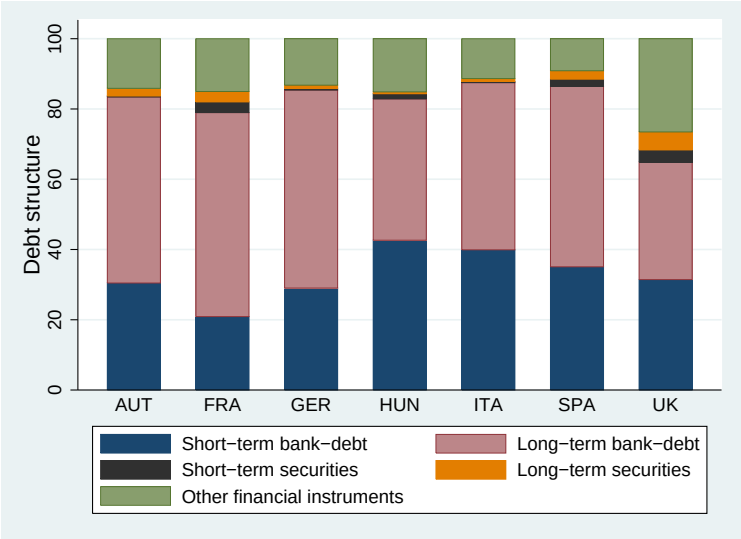
The EFIGE dataset also highlights other interesting phenomena. In particular, we can observe that German firms have a more diversified debt structure compared to other European firms. However, to see this latter phenomena, we need to summarize the information about the debt structure of each firm at the end of year into a synthetic indicator (for a similar study in the US see Colla et al. (2013)). That is, we need to combine into a single indicator the information on the relative amount of bank debt vs corporate securities - both short-term and long-term (see again Figure (2)). This will be the scope of the next section, where we chose to rely on the traditional Herfindhal-Hirschmann Index (in the following HHI) as our measure of debt-concentration.

3 Determinants of firms debt concentration.

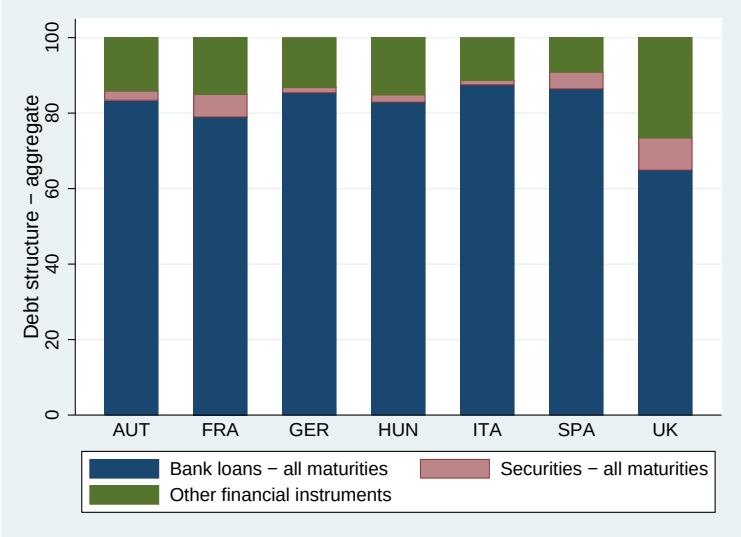
The HHI index of debt structure can be calculated as the (squared) sum of the each debt share of the firm normalized according to the number of types of debt. That is,

Figure 2: **Debt structure of European firms (2008)**

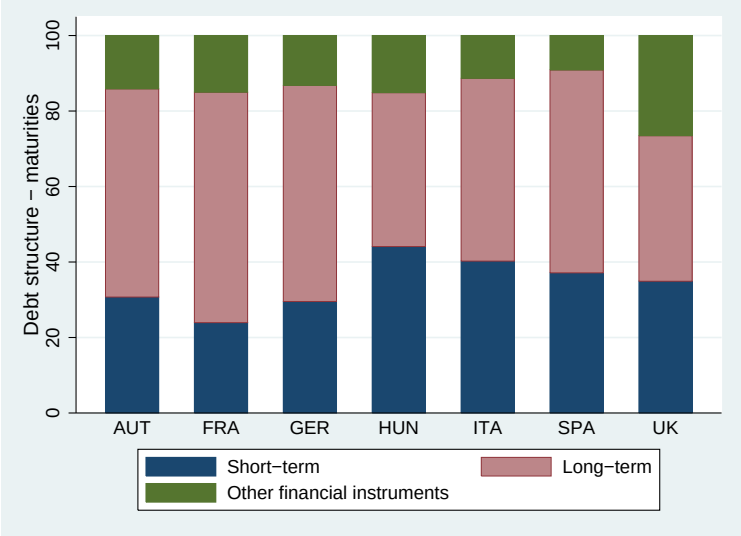
1.



2.

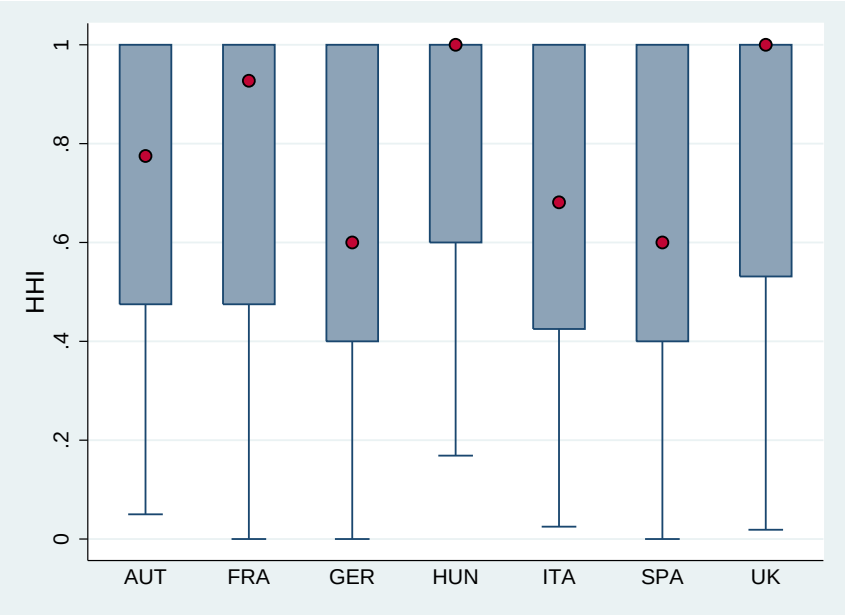


3.



Note: Each graph represents the (weighted) average for each country of each type of firm debt share. For each firm the sum over all types of debt equal 100.

Figure 3: **Concentration of Debt Structure (HHI)**



Note: The HHI index is constructed as the (squared) sum of each debt share in 2009. It assumes the maximum value of one when there is only one source of funding, and the minimum value of zero when the debt is equally divided among all sources. The graph represents the (weighted) distribution for each country of the HHI index over the firms in the sample. The red circle represents the median level.

$$HHI = \frac{[(short-term\ bank\ loans)^2 + (long-term\ bank\ loans)^2 + (short-term\ securities)^2 + (long-term\ securities)^2 + (other\ financial\ instruments)^2] - 1/5}{1 - 1/5}$$

The index assumes the maximum value of one when there is only one source of funding, and thus the maximum degree of debt specialization. The index assumes instead the value of zero when the firm equally divides the debt across all sources of funding. Relying on EFIGE-data we computed this index for each firms in the sample and averaged it across countries (using the appropriate weights to account for the probability of each firm of being sampled). As Figure (3) shows, the value of the HHI is quite high in all European countries, with the median level being to the maximum in some of them, suggesting that European firms do not tend to diversify their debt. Firms located in Germany and Spain seem to have the most diversified structure among these group of countries.

In Table (4) we study at a firm level the determinants of debt concentration (i.e. the HHI index will be our dependent variable) relying on a fractional logit regression (Papke and Wooldridge (1996)). Reported coefficients are marginal effects. This model can handle a variable which is confined in the interval [0,1] and with a significant number of observations at either zero or one. Though it would not be possible to make any casual claim as we rely on a cross-sectional regression, we can still derive important correlations which can also give insights on the different drivers in European countries. To account for any variable that might affect at sector level the structure of firms debt, we always include sectoral dummies.

In column (a) we start with a dummy for each age class of the firms. The base category are firms older than 20 years old. We can observe that firms aged between 6-20 years old have a higher concentrated debt structure (+3.5%), while young firms (less than 6 years old) seem also to have a slightly higher concentrated structure (+1%), though the coefficient is not statistically significant. There seems to be thus a U-inverse relationship between firm age and debt concentration. We then examine the structure of debt concentration across firms of different size. In column (b) we thus add a dummy for each size class (in terms of number of employees). The base category are small firms (with 10-19 employees). As the coefficient on each category is negative, the grower the firms, the lower will be the concentration index. As it has been highlighted several times in the literature (Berger and F Udell (1998)), small firms cannot rely on several sources of funding as for them the (fixed) costs to access to capital markets are higher. This relationship, however, is not linear, and there seems to be a U-relationship between firm size and debt concentration: medium size firms (20-49 employees) have a debt concentration 4% less concentrated, large firms (50-249 employees) 8% less concentrated, and very large firms (over 250 employees) 4% less concentrate. This latter result is consistent with a theoretical model in which banks offer more flexibility than market lenders when the firm is in distress but – outside of financial distress – bank lending have higher intermediation costs than markets (see Crouzet (2014), Bolton and Scharfstein (1996)): when the cost of lending of banks relative to those of markets increases substantially, medium-sized firms switch to a more market-financed debt structure (i.e. a higher concentration debt index).

In column (c) we add a dummy for firms belonging to a group (*Group*) and that have been involved in mergers and acquisition deals (*M&As*). Only being part of a group seems to positively and significantly affect firm debt structure (+3%).

In column (d) we add a dummy equal to one for firms that declared to have been financial constrained (*Financial constraint*s) and experienced an increase in the cost of bank lending (*Increase finance cost*) in 2009. As one would expect, these variables have a negative effect, which is statically and economically significant (about 5% less concentrated), on debt concentration. Firms that were not (fully or partially) granted bank loans, either successfully looked for alternative sources of funding or did not reach the desired amount of credit, resulting in a lower value of the HHI index. To investigate whether information asymmetries are responsible for different debt concentration, we then add a dummy equal to one for firms involved in R&D activities (*R&D*) - as a proxies for firm opaqueness, and a dummy for firm operating outside the domestic market (*Export*). Even in this case, these variables have a negative impact on debt concentration. This result is robust if we replace the R&D dummy with its percentage of firm-turnover, and contrasts with Colla et al. (2013).[2] In column (e), we add a dummy for listed firms. Though as expected the coefficient is negative (i.e. listed firms are expected to rely on more source of funding by having easier access to bond markets), it is not statically significant.

[2]To control if R&D is capturing firm growth opportunities, we also added the share of reduction in turnover variation between 2008-2009. The results did not change.

Finally, in column (f) we add a dummy for each country in our dataset to account for all the (unobservable) macroeconomic conditions which may affect debt concentration in year 2009 (such as short-term rate, inflation or default spread, see (Erel et al. (2012))). The base category are firms located in Germany. In all countries but Spain, firms have a higher concentration debt index compared to firms located in Germany. For example, Hungarian firms have a debt structure that is about 13% more concentrated than German firms. This analysis of the Efige-data seems thus to suggest that German and Spanish firms have the most diversified debt structure in Europe.

In Table (6) we now study the determinants of each debt component (i.e. a single regression for each share of debt) relying on the same firm characteristics used to study firm debt concentration. Interestingly, though firm-size seems to explain the share short-term bank loans and long term securities, the U-relationship has disappeared. Moreover, also the U-inverse relationship with firm age has disappeared. Strikingly, the coefficient on the dummy for listed firms now significantly affects the share of short-term and long-term term bank debt (consequently also driving the behaviour of short-term and long-term debt in general), whereas the coefficient of the R&D dummy is not anymore significant. Being part of group, now seems to affect the share of bank loans, while M&As deals decrease the share of short-term bank loans and increase the share of long-term bank loans.

The country dummies are still significant indicating that – in line with what we observed in figure (2) – in Spain, Italy and Hungary the share of short-term bank loan is significant larger (5%, 9% and 13%) than in Germany (the base category), though in Spain the share of securities (both short and long-term) is larger (about 1.5%). This result is important as we are including a dummy for financially constrained firms, which positively affects the share of short-term bank loans and negatively the share of long-term bank loans.

To summarize, these results combined with those on debt concentration suggest that firm size and age affect the composition of firm debt structure but not the single share of debt, which is mainly driven by country characteristics. In particular, small and large firms have a more concentrated debt structure. Somehow counterintuively – being listed in the stock market seems also to affect the share of bank loans. These results hold controlling for a number of other firm characteristics and unobservable sector characteristics. Germans and Spanish firms have the most diversified structure, though Spanish firms seem to rely more on short-term (bank) types of debt and long-term securities.

3.1 Robustness checks: model specification

In the previous section we have analyzed the determinants of firm debt concentration by constructing an HHI index and relying on a fractional logit regression. To check whether the model estimated is correctly specified we first rely on a linktest, which basically test whether the "link" function is specified correctly. We thus regress the dependent variable on the predicted values and their squares. If the model is specified correctly, the squares of the predicted values should

not be statistically significant. The results from this test suggest that the model is correctly specified as the squared of predict values never turned out to be significant.

We then check whether there are problems of firm selection into debt. In fact, the HHI index can computed only for those firms who hold a positive amount of debt. As such, the drawback is that we are studying the selected group of firms in our sample who hold a positive amount of debt. If firms made this decision randomly, we could ignore that not all HHI indexes are observed. Such an assumption of random selection, however, is unlikely to be true. We try to account for this, by estimating an Heckman selection model, which allow to control for firms selection into debt.[3] Results are reported in Table (5). Identification relies on functional form as we do not have any exclusionary restriction to rely on. First of all, it is important to notice that almost all the previous results are robust (compare the second stage of Table (5) with column f of Table (3)). The only exception is the coefficient on the R&D dummy which is now not statistically significant. As such, we can be confident that our previous results are robust to firm selection into debt. Secondly, it is important to notice that firm size has a positive (and thus opposite) effect on firm decision to hold debts (see the first stage of Table (5)). This result is consistent with previous studies (see, for example, Faulkender and Petersen (2006); JS Ramalho and da Silva (2009)), which suggest that the presence of (fixed) transaction costs in the issuance of debt may induce smaller firms to rely less on external finance but – conditional on having debt – they tend to have more debt (in our case, they are less diversified). Finally, the test for independence between the two equations (see the test for $\rho = 0$ at the bottom of Table (5)) suggests that there is no correlation.

Motivated by these results, and by the fact that we cannot rely on any exclusionary restriction, we then estimate a two-part model for each firm debt share to check the model specification for these shares (i.e. a Heckman model with $\rho = 0$). More precisely, we rely on a binary choice model to explain the probability of a firm raising debt along with a fractional regression model to explain the relative amount of debt. Similar to the Heckman model, this specification allow us to consider that factors that determine whether a firm issues a debt or not could be different from those that determine how much debt is issued.[4] Results are reported in Table (7). Even in this case, results are consistent with those achieved in Table (6), which only considered the subsample of firms which have a positive amount of debt. In particular, again firm-size seems only to explain the share short-term bank loans, while the U-inverse relationship with firm age has disappeared. In addition, in line with the first-stage of the Heckman selection model, firm size has an opposite effect on firm decision to hold (bank) debt. The coefficient on the dummy for listed firms is again statistically significant for the share of short-term (positive) and long-term (negative) term bank debt, whereas the coefficient of the R&D dummy is almost never significant.

To summarize, the robustness analyses we have just conducted suggest that the results of

[3] Another different (though related question) would be then to examine those firms who do not have any positive amount of debt (i.e. zero-leverage firms, see Strebulaev and Yang (2013)).

[4] Even in this case, however, we also run Heckman selection models obtaining similar results.

Section 3 are robust to model specification and firm selection into debt.

3.2 Robustness checks: additional drivers

The use of country fixed-effects in our fractional logit specification cannot explain the entire differences over country groups. It is thus insightful to examine other country-specific factors that might affect our results. First of all, some countries are usually characterized by relationship lending, i.e. banks have acquired over time an informational privilege on firms, which should make bank loans for some firms more attractive than bond markets. To account for that, we include in column (f) of Table (4) variables measuring (at a firm level) the share and the length of the relationship with the main bank (i.e. well known proxies for relationship lending, see for example (Elsas (2005))). Results not reported (but available upon request) indicate that our previous results did not change, though the length of the relationship turned out to be positive and significant (i.e. stronger bank-firm ties are associated with a less diversified debt structure). However, the economic effect of these variable is very low, being below 0.2%.

Another important difference across countries, which may affect the level of firm debt concentration, is the level of ownership concentration and the market for corporate control (see, for example, Rajan and Zingales (1995)). Since we have already controlled for M&As in Table (3), we now additionally consider the share of the main shareholder as well as his type (i.e. family owned, public entity, holding firm). Neither of these variables, however, is significant or significantly affect our results (results are not reported).

We additional consider a measure industry's dependence on external finance. In the questionnaire, firms are directly asked the extent to which the industry they work in relies on external sources of finance. Even this measure does not affect our results. We finally control whether our firms has issued equity to face their financing needs in the period considered. Our results are robust to this final control.

4 Demand vs Supply-side effects.

From the above analysis is still hard to identify the causes of different debt concentration level of firms. One reason could be that due to higher capital requirements, which forced banks to deleverage, firms were consequently forced to look for alternative sources of funding due to a reduced availability of bank loans. Another reason could be that investors' demand for corporate bonds has increased as a result of low-government bond yields. It could also be that after the crisis firms themselves realized that it would be too risky to rely on a single source of funding and started to diversify their debt-structure (even though bank loans were available). With the data hand we cannot directly identify which is the role of each driver. We can simply control for that – as we did in Table (4) - by means of country-level dummies, which account for these unobservable factors in each country. However, by contrasting margins of financially

constrained firms (i.e. firms that asked bank credit but were not successful) with those of non-financially constrained firms (i.e. firms that either did not ask for more credit or successfully got more credit) across European countries with respect to Germany, we can still get insights on the drivers of debt concentration at firm level. In fact, the variable "*Financial constraints*" is an indicator of the availability of bank loans at firm level (i.e. an indication for the supply of bank loans), whereas Germany is the strongest economy in Europe with the lowest government bond yields (i.e. an indication for the highest demand for corporate bonds). What is left should be the role of the firm demand for various types of debts.

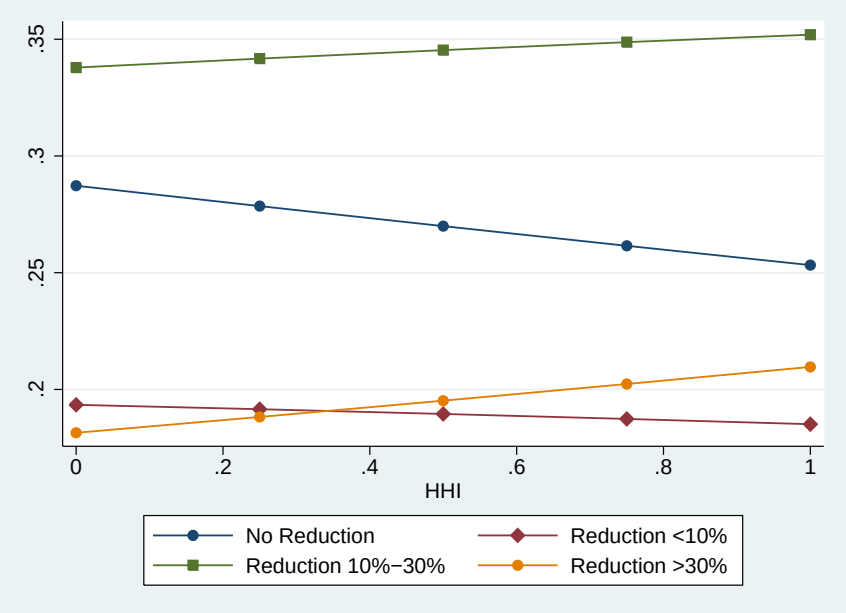
The results from this exercise are reported in Tab (8). From this table is interesting to notice that the difference in margins is negative and marginally (both economically and statistically) significant when we compare firms located in Spain with those located in Germany. That is, the difference in the concentration debt index between financially and non-financially constrained firms is smaller in Spain than in Germany. That means that financially constrained firms in Spain rely on broader sources of funding than financially constrained firms located in Germany, both in comparison with their respective non-financially constrained firms. In all the other countries, this difference is instead positive, meaning that financially constrained firms have a more concentrated debt structure. The overall impact, however, is marginal.

In line with the evidence reported above (see again figure 1), these results point to a different behaviour of Spanish firms and a possible substitution of banks loans by corporate bonds in this country. These results are also consistent with the evidence provided by Giovannini et al. (2015), which report different time pattern for the demand for loans by European firms. In particular, they show that in Spain banks tightened their credit standards at exactly the same time as firms' demand for loans dropped, while in Italy and France the tightening of credit standards led the drop in demands for loans by two quarters.

5 Debt structure and performance.

To get insights on the relationship between firm performance and firm debt concentration, we run in Table (9) an ordinal logit regression in which the dependent variable is a categorical variable which account for the reduction in firm turnover in 2009 in comparison with 2008. More precisely, the variable is equal to zero if the firm experienced no reduction, to one if experienced a reduction of 10%, to two if experienced a reduction between 10% and 30%, and to three if the reduction was above 30%. Reported coefficients represent the average of marginal effects for each category of turnover reduction. It is interesting to see that the indicator of debt concentration (i.e. the HHI index) is positively and significantly associated with turnover reduction. That is, firms relying on a less diversified debt structure also end up to get a strong reduction in the turnover. For example, firms with higher level of HHI are 3% less likely to experience no reduction in turnover, while they are 3% more likely to experience a severe reduction (above 30%). This more evident if we report on a graph the predicted probabilities for each class of

Figure 4: **Firm reduction in turnover and debt concentration**



The figure reports the predict probabilities based on Table (9) for each class of firm reduction in turnover according to different values of the debt concentration index HHI.

turnover reduction in relationship with different level of the HHI (see Figure (4)): as this figure highlights the higher the level of HHI, the lower are the predicted probabilities of experiencing no reduction in turnover (see the blu-line with circles). From Table (9) we can also observe that financially constrained firms are also more likely to experience important reduction in turnover (+8%).

Given the cross-sectional nature of our data, however, the actual causality direction is hard to disentangle. In the following, we thus aim to conduct a casual analysis exploiting the entire sample of firms and the cross-country variation in financial integration. We proceed in three steps. First of all, we utilize the values of the dummies for each country and sector in Table (4) to construct an index of country debt specialization which varies across countries and sector (a procedure similar to the one used by Guiso et al. (2004) to develop an index of financial development). According to this index (see Table (10)), we observe the lowest level of debt concentration in Spain and in Germany. In the second step, we use this indicator of country debt specialization as an explanatory variable in the regressions for firm turnover but this time exploiting the entire sample of firms (i.e. including also those firms without any positive amount of debt). The exogeneity of this indicator can be assumed here since the group of firms who hold debt do not coincide completely with the group of firms that have been used to construct the country-measure of debt specialization. However, in this setting (and especially in the third step) the use of country dummies is problematic. We therefore remove countries dummies but control for other country-level macro-economic characteristics by including country gdp per capita in 2007 (which is also a predetermined exogenous variable). Results suggest (see column *a*, *b*, *c*, *d* in Table (11)) that firms in country with higher level of debt specialization are less likely

to experience no reduction in turnover (-56%), and more likely to experience important reduction in firms turnover (+26% for reduction between 10-30%, and +41% for reduction above 30%). Finally, to check the robustness of our indicator of country debt-specialization, we develop an instrument for the indicator of country debt-specialization. Specifically, we construct an exogenous indicator of country financial integration in the spirit of Kalemli-Ozcan et al. (2010, 2013). Differently from them, however, we rely on the most important financial directives only (that is, the *prospectus, market-abuse*, and *take-over bids* directives see Enriques and Gatti (2008)),[5] and we also need to synthesize the information on financial integration into a single cross-country indicator (whereas they have a time-varying instrument). We thus compute the country indicator of financial integration as the total number of quarters up to (the last quarters of the) year 2007 that each country has had in place each directive. For example, for Germany that has implemented the *prospectus directive* in the third quarter of year 2005, the *take-over bids directive* in the third quarter of year 2006, and the market-abuse directive in the last quarter of 2004, the instrument assumes the value of 26=9+5+12. The assumption is that the higher the total number of quarters, the higher the financial integration in the country, and consequently, the higher are the opportunities for firms to diversify their sources of funding. As this index varies at country-level, we need again to remove country-dummies and include an indicator for country macro-economic conditions (i.e. gpd per capita in 2007). Indeed the first-stage regressions (not reported) suggest that a country level of financial integration is significantly and negatively associated with a country level of debt specialization. That is, the higher the country-financial integration, the lower the country debt specialization. Results for the second-stage are reported in Table (11) in IV-columns. The test of Montiel Olea and Pflueger (2013) rejects the null hypothesis of weak instruments. These results are mainly consistent with those emerged in the second step: firms in countries with high level of debt specialization are less likely to experience no reduction in firms turnover (-47%), and are more likely to experience important reduction (+40% for reduction between 10-30%).

6 Discussion and Conclusions.

During the financial crisis of 2007-09, European banks were concerned about their counterpart exposure to the US sub-prime market and began to hoard liquidity. In order to repair their balance sheets and deleverage, they thus started to progressively tightening credit conditions. As a consequence, in such period of reduced bank credit availability, European firms also started shifting the composition of their debt from bank loans towards debt securities. The way in which bank loans has been replaced with other sources of funding has differed across countries and was related to factors that vary across Member States, such as the role of small firms in the economy, their access to market financing, the importance of the linkages between banks

[5] We do not consider the transparency directive as there is no variation in the implementation time across countries.

and firms. Everywhere, however, the development of a financial system that is less resilient on banks and offers a broader range of financing alternatives is seen as desirable.

To shed some lights on the determinants of firm debt structure and on the level of debt specialization, in this paper we take advantage of a cross-country comparable sample of manufacturing European firms. Our results suggest that firm age and size seem to significantly affect the way each firm combines the different types of debt but not the level of each debt share, while being listed in the stock market seems to only affect the level of the share of bank debt (both short-term and long-term). We also observe that firms located in Spain chose to rely on the most diversified debt structure, though the effect which is driven by firm's choice is not economically sizeable. Spanish firms also tends to rely more on short-term type of (bank) debt. These results thus suggest there is a process of disintermediation in Spain, as Spanish firms had historically relied on bank lending more than their peers in other countries.

Finally, the evidence provided in this paper suggests that it is less likely to observe a severe reduction in firm turnover if firms have a diversified debt structure. This latter result has important policy implications. For example, in the light of the above results it would be beneficial in bank-based countries to encourage firms to rely more on markets as a source of funding to achieve a more diversified structure (and viceversa for market-based countries). As such, a policy that has the potential to bridge the gap between the funding needs of firms and the availability of bank loans (e.g. by promoting market for debt securities with a tax exemption for issuers) may work properly.

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Table 1: VARIABLE DESCRIPTION

Variable	Description
HHI	This variable represents the Herfindhal Hirschmann index of the firm debt in 2009. It is computed as the (squared) sum of the each firm debt share and it is normalised for the number of types of debt. It varies between zero and one.
Turnover reduction	This is a categorical variable which is equal to 0 if the firm experienced no reduction in turnover, equal to 1 if the firm experienced a reduction below 10%, equal to 2 if experienced a reduction between 10% and 30%, equal to 3 if the firm experienced a reduction in turnover above 30%.
Small firm (10-19 Employees)	This is a dummy variable equal to one if the number of employees is between 10-19.
Medium firm (20-49 Employees)	This is a dummy variable equal to one if the number of employees is between 20-49.
Large firm (50-249 Employees)	This is a dummy variable equal to one if the number of employees is between 50-249.
Large firm (over 250 Employees)	This is a dummy variable equal to one if the number of employees is above 250.
Young firm (< 6 years)	This is a dummy variable equal to one if the age of the firm is below 6 years old.
Firm 6-20 years	This is a dummy variable equal to one if the age of the firm is between 6 years old and 20 years old.
Old firms	This is a dummy variable equal to one if the age of the firm is above 20 years old.
Group	This is a dummy variable equal to one if the firm belongs to a group.
M&As	This is a dummy variable equal to one if the firm has acquired or incorporated other firms in the last three years (2007-2009).
Financial constraints	This is a dummy variable equal to one if the firm has applied for a bank loan in 2009 but the request was not successful.
Increase finance cost	This is a dummy variable equal to one if the firm has experienced in 2009 an increase in the cost of bank lending.
Listed	This is a dummy variable equal to one if the firm is listed on a stock exchange.
Export Dummy	This is a dummy variable equal to one if the firm export the products in foreign markets.
R&D Dummy	This is a dummy variable equal to one if the firm has undertaken any R&D actvities during the last three years (2007-2009).

Table 2: DEBT STRUCTURE ACROSS EUROPEAN COUNTRIES

	Austria		France		Germany		Hungary		Italy		Spain		United Kingdom	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Short-term bank loans	0.305	0.345	0.209	0.32	0.29	0.332	0.426	0.425	0.399	0.377	0.351	0.334	0.314	0.395
Long-term bank loans	0.53	0.397	0.581	0.4	0.564	0.364	0.402	0.414	0.476	0.383	0.513	0.356	0.334	0.4
Short-term securities	0.003	0.022	0.03	0.127	0.005	0.036	0.015	0.12	0.003	0.042	0.021	0.097	0.035	0.15
Long-term securities	0.022	0.115	0.03	0.13	0.009	0.06	0.005	0.053	0.008	0.07	0.024	0.122	0.051	0.184
Other financial instruments	0.141	0.32	0.15	0.311	0.132	0.28	0.151	0.338	0.114	0.269	0.091	0.236	0.265	0.407
Bank loans (all maturities)	0.834	0.335	0.79	0.344	0.854	0.288	0.829	0.354	0.875	0.28	0.864	0.279	0.649	0.433
Securities (all maturities)	0.025	0.121	0.06	0.187	0.014	0.08	0.02	0.131	0.011	0.085	0.045	0.164	0.086	0.238
Short-term (all debt types)	0.307	0.345	0.239	0.333	0.295	0.331	0.441	0.427	0.402	0.377	0.371	0.338	0.349	0.403
Long-term (all debt types)	0.552	0.391	0.61	0.397	0.572	0.362	0.408	0.414	0.484	0.383	0.538	0.352	0.386	0.414
HHI index	0.729	0.291	0.746	0.288	0.681	0.289	0.811	0.254	0.708	0.282	0.643	0.282	0.777	0.28

All variables measure the share of each debt component in firm balance sheet at the end of year 2009. The (weighted) mean represents thus the share of each debt component in the population of firms.

Table 3: FIRM CHARACTERISTICS ACROSS EUROPEAN COUNTRIES

	Austria		France		Germany		Hungary		Italy		Spain		United Kingdom	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Small firm (10-19 Employees)	0.217	0.414	0.388	0.487	0.239	0.427	0.326	0.47	0.347	0.476	0.355	0.479	0.265	0.442
Medium firm (20-49 Employees)	0.49	0.502	0.38	0.486	0.466	0.499	0.408	0.492	0.512	0.5	0.467	0.499	0.424	0.495
Large firm (50-249 Employees)	0.236	0.426	0.187	0.39	0.251	0.434	0.218	0.414	0.125	0.33	0.158	0.365	0.266	0.442
Large firm (over 250 Employees)	0.058	0.234	0.046	0.209	0.045	0.206	0.048	0.214	0.016	0.126	0.02	0.139	0.044	0.206
Young firm (< 6 years)	0.242	0.43	0.274	0.446	0.349	0.477	0.788	0.409	0.342	0.475	0.436	0.496	0.343	0.475
Firm 6-20 years	0.12	0.326	0.075	0.264	0.07	0.256	0.129	0.335	0.068	0.252	0.066	0.248	0.098	0.298
Old firms (> 20 years)	0.638	0.482	0.65	0.477	0.58	0.494	0.083	0.277	0.589	0.492	0.498	0.5	0.558	0.497
Group	0.2	0.401	0.261	0.439	0.109	0.312	0.169	0.375	0.133	0.34	0.133	0.34	0.24	0.427
M&As	0.166	0.373	0.091	0.287	0.141	0.348	0.052	0.222	0.084	0.277	0.084	0.277	0.152	0.359
Financial constraints	0.042	0.201	0.047	0.212	0.061	0.24	0.051	0.221	0.122	0.328	0.128	0.334	0.011	0.106
Increase finance cost	0.402	0.492	0.31	0.463	0.381	0.486	0.672	0.471	0.455	0.498	0.52	0.5	0.44	0.497
Listed	0.033	0.18	0.013	0.115	0.012	0.11	0.003	0.053	0.004	0.063	0.007	0.084	0.03	0.172
Export Dummy	0.617	0.488	0.509	0.5	0.522	0.5	0.573	0.496	0.683	0.465	0.539	0.499	0.596	0.491
R&D Dummy	0.58	0.495	0.527	0.5	0.542	0.499	0.288	0.454	0.565	0.496	0.467	0.499	0.537	0.499
Turnover Reduction	1.164	1.038	1.434	1.083	1.166	1.071	1.567	1.067	1.509	1.069	1.733	1.044	1.246	1.061

All variables are dummies. The (weighted) mean represents thus the share of firms within each category in the population.

Table 4: DEBT CONCENTRATION OF EUROPEAN FIRMS

The dependent variable is the HHI index. Since the HHI index is a fraction and varies between 0 and 1, the estimated model is a fractional regression.

	a	*b*	*c*	*d*	*e*	*f*
Young (< 6 years)	0.0124	0.0113	0.0137*	0.0134*	0.0125	0.0113
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
6-20 years	0.0347**	0.0317**	0.0365**	0.0367**	0.0350**	0.0276*
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Medium firm (20-49 Employees)	-0.0428***	-0.0439***	-0.0432***	-0.0428***	-0.0384***	-0.0379***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Large firm (50-249 Employees)	-0.0782***	-0.0836***	-0.0847***	-0.0850***	-0.0752***	-0.0786***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.012)
Large firm (over 250 Employees)	-0.0394**	-0.0513***	-0.0532***	-0.0512**	-0.0392*	-0.0463**
	(0.018)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Group		0.0306***	0.0290***	0.0289***	0.0318***	0.0229**
		(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
M&As		-0.0186	-0.0161	-0.0166	-0.0138	-0.0134
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Financial constraints			-0.0546***	-0.0545***	-0.0531***	-0.0372***
			(0.013)	(0.013)	(0.013)	(0.013)
Increase finance cost			-0.0385***	-0.0382***	-0.0375***	-0.0364***
			(0.008)	(0.008)	(0.008)	(0.008)
Listed				-0.0151	-0.0127	-0.0223
				(0.038)	(0.038)	(0.038)
Export Dummy					-0.0146*	-0.0169**
					(0.008)	(0.008)
R&D Dummy					-0.0314***	-0.0307***
					(0.008)	(0.008)
Austria						0.0589*
						(0.031)
France						0.0576***
						(0.016)
Hungary						0.1269***
						(0.022)
Italy						0.0281**
						(0.014)
Spain						-0.0377***
						(0.014)
United Kingdom						0.0963***
						(0.016)
Sector dummies	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
ll	-3260	-3257	-3229	-3224	-3218	-3188
N	6764	6762	6724	6712	6712	6712

*p<0.10,** p<0.05, ***p<0.01

Note: The base category comprises firms located in Germany, which have a small size (between 10-19 employees), and have more than 20 years old.

Table 5: HECKMAN SELECTION MODEL FOR HHI

The model consists of two equations. The first stage consists of a probit model for the probability of holding debt and relies on the entire sample of firms. The second stage consists of a linear regression for the HHI index relying only on the sample of firms holding a positive amount of debt.

	First stage *Prob. to hold debt*	*Second Stage* *HHI index*
Young (< 6 years)	0.0134*	0.0075
	(0.007)	(0.008)
6-20 years	0.0252*	0.0194
	(0.013)	(0.014)
Medium firm (20-49 Employees)	0.0302***	-0.0397***
	(0.008)	(0.008)
Large firm (50-249 Employees)	0.0661***	-0.0852***
	(0.010)	(0.011)
Large firm (over 250 Employees)	0.0378**	-0.0523***
	(0.015)	(0.017)
Group	-0.0462***	0.0303***
	(0.008)	(0.010)
M&As	0.0443***	-0.0116
	(0.012)	(0.011)
Financial constraints	0.5109***	-0.0452***
	(0.016)	(0.016)
Increase finance cost	0.6404***	-0.0437***
	(0.005)	(0.007)
Listed	0.0117	-0.0142*
	(0.007)	(0.008)
Export Dummy	0.0294***	-0.0291***
	(0.007)	(0.007)
R&D Dummy	-0.0764***	0.0036
	(0.020)	(0.031)
Austria	0.0243	0.0265
	(0.017)	(0.028)
France	0.1204***	0.0573***
	(0.009)	(0.014)
Hungary	0.0881***	0.1308***
	(0.020)	(0.022)
Italy	0.2486***	0.0237*
	(0.010)	(0.013)
Spain	0.2748***	-0.0329**
	(0.011)	(0.013)
United Kingdom	0.1154***	0.0961***
	(0.011)	(0.015)
Sector dummies	Yes	Yes
Log-likelihood		-7616
Observations	14638	6712
Lr test rho=0	chi2=1.90	p=0.167

*p<0.10,** p<0.05, ***p<0.01

Table 6: DETERMINANTS OF EACH DEBT COMPONENT (SHARES)

The dependent variables are each debt component. Bank loans is the combined share of short-term and long-term bank loans, Securities is the combined share of short-term and long-term secutiries, Short-term is the combined share of all types of short-term debts, and Long-term is the combined share of all types of long-term debts. The estimated model is a fractional regression.

	Short-term bank loans	*Long-term bank loans*	*Short-term securities*	*Long-term securities*	*Other finan. instruments*	*Bank loans*	*Securities*	*Short-term*	*Long-term*
Young (< 6 years)	-0.0123	0.0055	-0.0036*	-0.0003	0.0116	-0.0075	-0.0040	-0.0160	0.0052
	(0.011)	(0.011)	(0.002)	(0.003)	(0.008)	(0.009)	(0.004)	(0.011)	(0.011)
6-20 years	-0.0376**	0.0177	0.0034	-0.0082**	0.0250	-0.0205	-0.0047	-0.0340*	0.0092
	(0.019)	(0.021)	(0.006)	(0.004)	(0.016)	(0.017)	(0.007)	(0.019)	(0.021)
Medium firm (20-49 Employees)	-0.0075	0.0229*	-0.0065**	-0.0027	-0.0058	0.0150	-0.0090**	-0.0139	0.0201
	(0.012)	(0.012)	(0.003)	(0.003)	(0.009)	(0.010)	(0.004)	(0.012)	(0.012)
Large firm (50-249 Employees)	0.0173	0.0025	-0.0055*	-0.0006	-0.0118	0.0183	-0.0062	0.0116	0.0019
	(0.015)	(0.015)	(0.003)	(0.005)	(0.011)	(0.012)	(0.006)	(0.015)	(0.015)
Large firm (over 250 Employees)	0.0207	-0.0019	-0.0080	0.0027	-0.0086	0.0146	-0.0056	0.0116	0.0017
	(0.024)	(0.026)	(0.005)	(0.007)	(0.018)	(0.020)	(0.009)	(0.024)	(0.026)
Group	0.0212	-0.0658***	-0.0027	0.0001	0.0457***	-0.0425***	-0.0028	0.0181	-0.0656***
	(0.014)	(0.014)	(0.003)	(0.004)	(0.012)	(0.013)	(0.005)	(0.014)	(0.014)
M&As	-0.0319**	0.0437***	0.0014	-0.0006	-0.0117	0.0114	0.0006	-0.0305**	0.0429***
	(0.015)	(0.016)	(0.004)	(0.005)	(0.011)	(0.012)	(0.006)	(0.015)	(0.016)
Financial constraints	0.0582***	-0.0407**	0.0023	-0.0056	-0.0210	0.0231*	-0.0032	0.0608***	-0.0446***
	(0.017)	(0.017)	(0.005)	(0.004)	(0.013)	(0.014)	(0.006)	(0.017)	(0.017)
Increase finance cost	0.0178*	0.0218**	-0.0029	-0.0021	-0.0337***	0.0389***	-0.0051	0.0147	0.0196*
	(0.010)	(0.010)	(0.002)	(0.003)	(0.008)	(0.008)	(0.003)	(0.010)	(0.010)
Listed	0.0544***	-0.0367***	0.0007	-0.0027	-0.0164*	0.0185**	-0.0020	0.0550***	-0.0396***
	(0.011)	(0.011)	(0.002)	(0.003)	(0.008)	(0.009)	(0.004)	(0.011)	(0.011)
Export Dummy	0.0011	-0.0057	0.0040*	-0.0021	0.0039	-0.0059	0.0019	0.0049	-0.0078
	(0.010)	(0.011)	(0.002)	(0.003)	(0.008)	(0.009)	(0.004)	(0.011)	(0.011)
R&D Dummy	-0.0523	-0.0287	0.0062	-0.0005	0.0519	-0.0597	0.0053	-0.0446	-0.0284
	(0.040)	(0.049)	(0.011)	(0.010)	(0.034)	(0.038)	(0.016)	(0.041)	(0.048)
Austria	0.0074	-0.0070	-0.0029	0.0146	-0.0109	-0.0011	0.0119	0.0045	0.0080
	(0.040)	(0.047)	(0.002)	(0.011)	(0.044)	(0.044)	(0.012)	(0.040)	(0.047)
France	-0.0866***	0.0325	0.0247***	0.0184***	0.0082	-0.0511***	0.0425***	-0.0613***	0.0521**
	(0.019)	(0.021)	(0.005)	(0.005)	(0.015)	(0.017)	(0.008)	(0.019)	(0.021)
Hungary	0.1293***	-0.1588***	0.0135	-0.0033	0.0218	-0.0313	0.0083	0.1422***	-0.1617***
	(0.033)	(0.033)	(0.011)	(0.004)	(0.027)	(0.028)	(0.011)	(0.033)	(0.033)
Italy	0.0914***	-0.0699***	-0.0021	-0.0001	-0.0184	0.0209	-0.0025	0.0886***	-0.0694***
	(0.017)	(0.018)	(0.002)	(0.003)	(0.013)	(0.014)	(0.004)	(0.017)	(0.018)
Spain	0.0500***	-0.0423**	0.0162***	0.0153***	-0.0390***	0.0073	0.0313***	0.0657***	-0.0268
	(0.016)	(0.017)	(0.003)	(0.004)	(0.013)	(0.014)	(0.006)	(0.016)	(0.017)
United Kingdom	0.0151	-0.2123***	0.0301***	0.0435***	0.1202***	-0.1940***	0.0736***	0.0451**	-0.1683***
	(0.020)	(0.021)	(0.006)	(0.008)	(0.019)	(0.020)	(0.010)	(0.020)	(0.021)
Sector dummies	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
ll	-3620	-3897	-412	-543	-2331	-2628	-825	-3675	-3900
N	6712	6712	6712	6712	6712	6712	6712	6712	6712

*p<0.10,** p<0.05, ***p<0.01

Table 7: DETERMINANTS OF EACH DEBT COMPONENT: TWO PART MODEL

The estimated model consists of two parts: (1) estimates the probability of holding debt relying on the entire sample of firm. The second part (2) estimate a fractional logit relying only on firm holding a positive amount of debt. *p<0.10,** p<0.05, ***p<0.01

	short bank (1)	*short bank (2)*	*long bank (1)*	*long bank (2)*	*short secur (1)*	*short secur (2)*	*long_secur (1)*	*long secur (2)*	*others (1)*	*others (2)*
Young (< 6 years)	0.005	-0.004	0.009	0.012	-0.006**	0.004	-0.002	0.035	0.003	0.062***
	(0.007)	(0.011)	(0.007)	(0.010)	(0.003)	(0.031)	(0.003)	(0.040)	(0.006)	(0.019)
6-20 years	-0.007	-0.010	0.023	0.018	-0.005	0.179**	-0.007	0.039	0.013	0.048
	(0.013)	(0.022)	(0.014)	(0.020)	(0.005)	(0.083)	(0.005)	(0.076)	(0.011)	(0.033)
Medium firm (20-49 Employees)	0.039***	-0.039***	0.047***	-0.017	-0.003	-0.063*	-0.001	0.007	0.007	-0.037*
	(0.008)	(0.013)	(0.008)	(0.012)	(0.003)	(0.033)	(0.003)	(0.043)	(0.006)	(0.021)
Large firm (50-249 Employees)	0.098***	-0.048***	0.086***	-0.054***	0.001	-0.079*	0.007	-0.037	0.022***	-0.077***
	(0.010)	(0.016)	(0.010)	(0.014)	(0.004)	(0.041)	(0.004)	(0.052)	(0.008)	(0.027)
Large firm (over 250 Employees)	0.068***	-0.032	0.044***	-0.019	-0.010*	0.042	0.011	0.007	0.005	-0.046
	(0.016)	(0.026)	(0.017)	(0.024)	(0.006)	(0.103)	(0.008)	(0.082)	(0.012)	(0.052)
Group	-0.035***	0.025*	-0.079***	-0.021	-0.008**	0.021	-0.008**	0.047	0.002	0.098***
	(0.009)	(0.015)	(0.009)	(0.014)	(0.003)	(0.046)	(0.003)	(0.057)	(0.007)	(0.025)
M&As	0.025**	-0.046***	0.053***	0.021	0.003	-0.014	0.004	-0.021	0.017*	-0.022
	(0.012)	(0.017)	(0.012)	(0.015)	(0.005)	(0.053)	(0.004)	(0.062)	(0.009)	(0.027)
Financial constraints	0.197***	0.014	0.211***	-0.067***	0.006	0.065	-0.000	-0.079	0.012	-0.068**
	(0.026)	(0.016)	(0.030)	(0.017)	(0.006)	(0.072)	(0.006)	(0.067)	(0.012)	(0.031)
Increase finance cost	0.405***	-0.022**	0.472***	-0.012	0.031***	-0.056*	0.032***	-0.050	0.130***	-0.102***
	(0.010)	(0.011)	(0.010)	(0.010)	(0.004)	(0.029)	(0.004)	(0.036)	(0.009)	(0.018)
Listed	0.036***	0.031***	0.010	-0.048***	0.001	-0.002	-0.002	-0.019	-0.005	-0.030
	(0.007)	(0.012)	(0.007)	(0.011)	(0.003)	(0.031)	(0.003)	(0.041)	(0.006)	(0.019)
Export Dummy	0.034***	-0.022*	0.031***	-0.023**	0.004	0.066**	0.003	-0.044	0.011**	-0.003
	(0.007)	(0.011)	(0.007)	(0.010)	(0.003)	(0.031)	(0.003)	(0.042)	(0.005)	(0.019)
R&D Dummy	-0.074***	-0.041	-0.052**	-0.080	0.011	-0.106	-0.001	-0.058	-0.002	-0.023
	(0.021)	(0.051)	(0.025)	(0.050)	(0.012)	(0.099)	(0.009)	(0.105)	(0.017)	(0.067)
Austria	0.021	0.056	0.032*	0.048	-0.001	-0.060	0.013*	0.135	-0.014	0.131
	(0.019)	(0.047)	(0.019)	(0.032)	(0.004)	(0.099)	(0.007)	(0.124)	(0.012)	(0.104)
France	0.029***	-0.006	0.127***	0.026	0.034***	0.111**	0.023***	0.082	0.036***	0.085**
	(0.010)	(0.024)	(0.011)	(0.019)	(0.004)	(0.044)	(0.004)	(0.061)	(0.008)	(0.034)
Hungary	0.082***	0.222***	-0.006	0.000	0.000	0.799***	-0.002	0.171	0.026*	0.151**
	(0.019)	(0.036)	(0.018)	(0.033)	(0.004)	(0.036)	(0.004)	(0.157)	(0.014)	(0.062)
Italy	0.178***	0.145***	0.205***	-0.054***	0.000	0.121**	0.008***	0.078	0.052***	0.014
	(0.011)	(0.019)	(0.011)	(0.016)	(0.002)	(0.061)	(0.003)	(0.066)	(0.008)	(0.029)
Spain	0.231***	0.036*	0.240***	-0.053***	0.033***	0.072*	0.028***	0.095*	0.054***	-0.105***
	(0.012)	(0.019)	(0.012)	(0.015)	(0.004)	(0.044)	(0.004)	(0.057)	(0.008)	(0.031)
United Kingdom	0.058***	0.112***	0.005	-0.055**	0.036***	0.155***	0.040***	0.177***	0.069***	0.243***
	(0.011)	(0.024)	(0.011)	(0.022)	(0.005)	(0.055)	(0.005)	(0.059)	(0.009)	(0.031)
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ll	-7039	-2324	-7383	-2668	-1534	-163	-1594	-188	-4732	-825
N	14638	4317	14638	5151	14617	362	14617	367	14638	1589

Table 8: CONTRAST MARGINS OF FINANCIALLY CONSTRAINED FIRMS ACROSS COUNTRIES

In this table we contrast the margins Table (4) for financially constrained firms (i.e. firms that asked bank credit but were not successfull) with those of non-financially constrained firms (i.e. firms that either did not ask for more credit or successfully got more credit) with respect to the same difference for firms located in Germany.

	Difference	**Std Errors**	**P-value**
Austria vs Germany	.0039	.0027	0.151
France vs Germany	.0049**	.0019	0.011
Hungary vs Germany	.0112***	.0043	0.009
Italy vs Germany	.0021*	.0011	0.054
Spain vs Germany	-.0015*	.0008	0.073
United Kingdom vs Germany	.0076***	.0027	0.006

Table 9: DETERMINANTS OF TURNOVER REDUCTION

The estimated model is an ordinal logit using firms with a positive amount of debt. The dependent variable is equal to 0 if the firm experienced no reduction in the turnover, equal to 1 if the firm experienced a reduction below 10%, equal to 2 if experienced a reduction between 10% and 30%, equal to 3 if the firm experienced a reduction in turnover above 30%.

	No reduction	*Reduction* $< 10\%$	*Reduction* $10\% - 30\%$	*Reduction* $> 30\%$
HHI	-0.0354***	-0.0092**	0.0142**	0.0304***
	(0.014)	(0.004)	(0.006)	(0.012)
Young (< 6 years)	0.0141*	0.0037*	-0.0055*	-0.0123*
	(0.008)	(0.002)	(0.003)	(0.007)
6-20 years	0.0671***	0.0141***	-0.0298***	-0.0514***
	(0.017)	(0.003)	(0.008)	(0.012)
Medium firm (20-49 Employees)	-0.0210**	-0.0051**	0.0088**	0.0173**
	(0.009)	(0.002)	(0.004)	(0.007)
Large firm (50-249 Employees)	-0.0429***	-0.0114***	0.0168***	0.0375***
	(0.012)	(0.003)	(0.005)	(0.011)
Large firm (over 250 Employees)	-0.0379	-0.0099	0.0151*	0.0327
	(0.024)	(0.007)	(0.009)	(0.023)
Group	-0.0167	-0.0045	0.0064	0.0148
	(0.011)	(0.003)	(0.004)	(0.010)
M&As	0.0415***	0.0093***	-0.0181***	-0.0328***
	(0.014)	(0.003)	(0.007)	(0.010)
Financial constraints	-0.0840***	-0.0292***	0.0251***	0.0881***
	(0.011)	(0.005)	(0.002)	(0.014)
Increase finance cost	0.0617	0.0121*	-0.0281	-0.0457
	(0.045)	(0.006)	(0.022)	(0.029)
Listed	-0.0736***	-0.0202***	0.0296***	0.0643***
	(0.008)	(0.002)	(0.003)	(0.007)
Export Dummy	-0.0064	-0.0017	0.0026	0.0055
	(0.008)	(0.002)	(0.003)	(0.007)
R&D Dummy	0.0332***	0.0087***	-0.0132***	-0.0287***
	(0.008)	(0.002)	(0.003)	(0.007)
Austria	0.0640	0.0115**	-0.0315	-0.0440*
	(0.043)	(0.006)	(0.022)	(0.026)
France	0.0439**	0.0087**	-0.0210**	-0.0316**
	(0.017)	(0.003)	(0.008)	(0.012)
Hungary	-0.0279	-0.0077	0.0114	0.0242
	(0.025)	(0.007)	(0.010)	(0.022)
Italy	-0.0094	-0.0024	0.0041	0.0078
	(0.013)	(0.003)	(0.006)	(0.011)
Spain	-0.0808***	-0.0277***	0.0263***	0.0821***
	(0.013)	(0.004)	(0.005)	(0.013)
United Kingdom	0.0784***	0.0129***	-0.0392***	-0.0522***
	(0.018)	(0.003)	(0.009)	(0.012)
Sector dummies	Yes	Yes	Yes	Yes
ll	-8462	-8462	-8462	-8462
N	6703	6703	6703	6703

*p<0.10,** p<0.05, ***p<0.01

Table 10: INDICATOR OF COUNTRY DEBT CONCENTRATION

Country	**Mean**	**Min**	**Max**
Austria	0.738	0.710	0.771
France	0.760	0.724	0.855
Germany	0.679	0.648	0.717
Hungary	0.814	0.793	0.840
Italy	0.720	0.681	0.827
Spain	0.647	0.615	0.687
United Kingdom	0.786	0.753	0.872

The indicator is defined as the level of debt concentration measured at the country-sector level. The coefficients on the country and sector dummies are obtained from Table (4), which relies *only* on those firms who hold a positive amount of debt.

Table 11: DETERMINANTS OF TURNOVER REDUCTION

The estimated model is an ordinal logit on the entire sample of firms. The dependent variable is equal to 0 if the firm experienced no reduction in the turnover, equal to 1 if the firm experienced a reduction below 10%, equal to 2 if experienced a reduction between 10% and 30%, equal to 3 if the firm experienced a reduction in turnover above 30%. The country indicator of debt specialization is computed as specified in Table (). The IV regressions instrument the country indicator of debt specialization with the financial integration indicator as explained in Section 5.

	No reduction (a)	*No reduction -IV*	*Reduction (b)*	*Reduction -IV*	*Reduction (c)*	*Reduction-IV*	*Reduction*	*Reduction -IV*
			$< 10\%$	$< 10\%$	$10\% - 30\%$	$10\% - 30\%$	$> 30\%$	$> 30\%$
Country debt specialization	-0.5628***	-0.4730**	-0.1070***	0.1949	0.2611***	0.4423*	0.4086***	-0.1642
	(0.109)	(0.223)	(0.021)	(0.202)	(0.051)	(0.234)	(0.079)	(0.184)
Gdp per capita 2007	0.0207***	0.0209***	0.0039***	-0.0000	-0.0096***	-0.0120***	-0.0150***	-0.0089***
	(0.001)	(0.002)	(0.000)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)
Young (< 6 years)	0.0178***	0.0253***	0.0034***	0.0096	-0.0083***	-0.0394***	-0.0130***	0.0046
	(0.006)	(0.008)	(0.001)	(0.007)	(0.003)	(0.008)	(0.005)	(0.007)
6-20 years	0.0573***	0.0937***	0.0088***	-0.0327**	-0.0280***	-0.0640***	-0.0382***	0.0031
	(0.013)	(0.015)	(0.001)	(0.013)	(0.007)	(0.016)	(0.008)	(0.012)
Medium firm (20-49 Employees)	-0.0032	0.0045	-0.0006	-0.0095	0.0015	0.0005	0.0023	0.0045
	(0.007)	(0.008)	(0.001)	(0.008)	(0.003)	(0.009)	(0.005)	(0.007)
Large firm (50-249 Employees)	-0.0245***	-0.0299**	-0.0050***	0.0061	0.0111***	0.0143	0.0184***	0.0095
	(0.009)	(0.012)	(0.002)	(0.011)	(0.004)	(0.013)	(0.007)	(0.010)
Large firm (over 250 Employees)	0.0141	0.0135	0.0023	0.0157	-0.0068	-0.0126	-0.0096	-0.0166
	(0.018)	(0.023)	(0.003)	(0.020)	(0.009)	(0.024)	(0.012)	(0.019)
Group	-0.0253***	-0.0392***	-0.0052***	0.0037	0.0114***	0.0236**	0.0191***	0.0119
	(0.008)	(0.011)	(0.002)	(0.010)	(0.004)	(0.011)	(0.006)	(0.009)
M&As	0.0267**	0.0242*	0.0045***	0.0002	-0.0128**	0.0023	-0.0184***	-0.0266**
	(0.011)	(0.013)	(0.002)	(0.012)	(0.005)	(0.014)	(0.007)	(0.011)
Financial constraints	-0.0815***	-0.0713***	-0.0225***	-0.0031	0.0317***	-0.0325	0.0723***	0.1069***
	(0.013)	(0.019)	(0.005)	(0.017)	(0.004)	(0.020)	(0.014)	(0.016)
Increase finance cost	-0.0133	-0.0093	-0.0027	-0.0277	0.0060	0.0319	0.0100	0.0052
	(0.023)	(0.030)	(0.005)	(0.027)	(0.010)	(0.031)	(0.018)	(0.025)
Listed	-0.0700***	-0.0673***	-0.0169***	-0.0226**	0.0304***	0.0254**	0.0564***	0.0644***
	(0.007)	(0.010)	(0.002)	(0.009)	(0.003)	(0.010)	(0.006)	(0.008)
Export Dummy	-0.0287***	-0.0352***	-0.0053***	-0.0104	0.0135***	0.0360***	0.0206***	0.0096
	(0.006)	(0.008)	(0.001)	(0.007)	(0.003)	(0.009)	(0.005)	(0.007)
R&D Dummy	0.0238***	0.0283***	0.0046***	-0.0057	-0.0110***	-0.0036	-0.0173***	-0.0190***
	(0.006)	(0.008)	(0.001)	(0.007)	(0.003)	(0.008)	(0.005)	(0.007)
Sector dummies	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
ll	-17941		-17941		-17941		-17941	
N	14141	14141	14141	14141	14141	14141	14141	14141