

The Impact of the Global Financial Crisis on Firms' Capital Structure

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Abstract

Using a data set covering about 277,000 firms across 79 countries over the period 2004–11, this paper examines the evolution of firms' capital structure during the global financial crisis and its aftermath in 2010–11. The study finds that firm leverage and debt maturity declined in advanced economies and developing countries, even in countries that did not experience a crisis. The deleveraging and maturity reduction were particularly significant for privately held firms, including small and medium enterprises. For small

and medium-size enterprises, these effects were larger in countries with less efficient legal systems, weaker information-sharing mechanisms, shallower banking systems, and more restrictions on bank entry. In contrast, there is weaker evidence of a significant decline of leverage and debt maturity among firms listed on a stock exchange, which are typically much larger than other firms and likely benefit from the “spare tire” of easier access to capital market financing.

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The Impact of the Global Financial Crisis on Firms' Capital Structure *

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I. Introduction

The collapse of Lehman Brothers in September 2008 had tremendous effects on financial markets across the globe. What started as a US crisis spread rapidly across both advanced and developing countries. It was transmitted worldwide through financial markets, international banks and trade links, and affected many economic sectors (Imbs, 2010; Ahn, Amiti and Weinstein, 2011; Cetorrelli and Goldberg, 2011; Chudik and Fratzscher, 2012; IMF, 2013).

These events offer an important opportunity to study how financial and macroeconomic instability affect the capital structures of firms. How did firms' capital structures evolve after the onset of the Global Financial Crisis in 2008? Were all firms affected equally or were privately held firms, especially small and medium-sized enterprises (SMEs), especially hit? Did capital structures change only in the countries that experienced a banking crisis, or did they change in many countries, depending on their specific institutional, financial, and macroeconomic characteristics? We particularly focus on two characteristics of firms: market access and size. It is important to distinguish between firms that are publicly-listed and privately-held, because the former are likely to enjoy better access to capital market financing than the latter. Importantly, greater information availability in being a listed firm may also mitigate the reduction of bank credit during a crisis. In contrast, an unlisted SME's access to external finance is more likely to depend on specific banking relationships relative to other firms, and, therefore, may be more severely affected by negative bank credit supply shocks due to their intrinsic opaqueness.

This paper examines these questions by relying on a unique firm-level data set covering more than 270,000 firms operating in 79 countries during the period 2004-2011. We study how

firms' capital structures evolved during the onset of the global financial crisis in 2008-2009, and its immediate aftermath in 2010-2011, which coincided with sovereign and banking crises in euro area countries. We characterize the evolution of the ratio of total debt to total assets (leverage), the ratio of long-term debt to total assets (long-term leverage), and the ratio of long-term debt to total debt (maturity composition), after accounting for standard firm characteristics that have been identified in the literature as important determinants of capital structures (Harris and Raviv, 1991; Rajan and Zingales, 1995; Demirguc-Kunt and Maksimovic, 1999; Booth et al., 2001). In particular, we examine how the capital structure of SMEs, large privately owned firms, and publicly listed firms behaved during the global crisis and its aftermath. Next, for privately-held firms and SMEs, where we observe the most significant changes, we also investigate the extent to which country characteristics explain the evolution of firms' capital structures since the global financial crisis.

Theory suggests that a financial crisis may impact the capital structure of firms through different channels. During a crisis, as uncertainty and risk rise and expected returns decline, both lenders and borrowers become reluctant to lock-in capital in long-term investments. From the perspective of the lenders, given a rise in default probabilities, the term premium at which they are willing to lend increases significantly during a crisis, which makes long-term debt less attractive relative to short-term debt (Gürkaynak and Wright, 2012; Dick, Schmelling and Schrimpf, 2013). Financial intermediaries with impaired balanced sheets may also strengthen their lending margins and increase their term premium even more. As uncertainty or risk increases and business prospects become more uncertain, firms that are unable to commit to an aggregate maturity structure may also reduce their debt maturity and leverage. For example in

the “rat race” capital structure model of Brunnermeier and Oehmke (2013), high volatility increases firms’ incentive to shorten the maturity of debt, in spite of the high roll-over costs associated with short-term debt, because doing so dilutes the pay-offs of long-term investors. They also show that, if firms value financial flexibility during volatile economic conditions, they will be less likely to enter into long-term contracts with covenants, and the demand for long-term debt will decline.¹ Thus, during periods of economic crisis, new issuance of long-term debt may decline and any new debt issues would have shorter maturities.

The maturity composition of corporate debt is important because it determines the extent to which assets are financed by liabilities that expose the firm to rollover risks. Hence, a decline in the maturity of corporate debt shifts rollover risks to firms and away from their lenders, and these refinancing risks may have a negative impact on long-term productive investments and firm growth (Milbradt and Oehmke, 2014). For example Duchin, Ozbas, and Sensoy (2010) and Almeida et al. (2012) for the US, and Vermoesen, Deloof, and Laveren (2013) for Belgium show that firms with higher amounts of short-term debt outstanding before the crisis experienced larger declines in investment during the crisis.

On the other hand, shorter maturities could help mitigate the underinvestment problem of debt finance in times of rising uncertainty and become more attractive to borrowers, because the value of short-term debt is less sensitive to future investment opportunities than the value of long-term debt (Myers, 1977).

¹ Diamond and He (2014) show instead that borrowers should aim at lengthening debt maturity during period of financial crisis, because the rollover-costs of short-term debt increase.

Theory also suggests that the extent to which a crisis impacts firms' capital structures through higher risk, higher uncertainty, or lower returns is likely to depend on the characteristics of financial systems and on the institutional environment in which firms operate. For example, in the agency cost model of Jensen and Meckling (1976), an increase in the variance of returns would induce more risk-taking by shareholders (a risk-shifting effect) in countries where monitoring costs and bankruptcy costs are high. When widespread bad news and uncertainty materialize, shortening of debt maturities and resulting de-leveraging are likely to be larger in environments where contracts are difficult to enforce, for instance where bankruptcy laws and procedures are such that liquidation of assets is costly (Diamond, 2004). In the international debt context, the lack of commitment to strong investor rights in countries with weak property rights or weak rule of law can result in inefficiently short debt maturities and excessive roll-over risks that materialize when uncertainty becomes high (Jeanne, 2009).

Without attempting to disentangle demand and supply factors, we show that, since the global financial crisis, firm leverage, the use of long-term debt to finance assets, and debt maturity have all declined among firms that used long-term debt financing before the crisis. These patterns are observed in developed countries and in developing countries; they are also present in countries that did not experience a systemic banking crisis, and across different type of firms. The reduction in debt maturity since the crisis is statistically and economically significant, even after we control for observed firm characteristics that are known to affect capital structures and for unobserved time invariant firm specific factors. We also uncover significant heterogeneity across firms and countries. In particular, we find that, after accounting for firm characteristics and firm fixed effects (also encompassing country time invariant characteristics), the decline in

leverage and in long-term debt financing was particularly pronounced among privately held firms, including small and medium firms. In contrast, there is weaker evidence of a significant decline in debt ratios or in the maturity of debt among firms listed on a stock exchange, which are typically much larger than other firms and have significantly easier access to capital market financing. For these firms, instead, these leverage and debt maturity ratios appear to have increased at the onset of the crisis in some cases.

Our analysis also suggests that there are complex interplays between the evolution of firm capital structures and country characteristics during and in the immediate aftermath of the global financial crisis. The impact of country characteristics on capital structures during the crisis cannot be simply uncovered from average econometric associations because they differ markedly by firm size and by type of incorporation (e.g., privately held or publicly listed on a stock exchange). When focusing on privately owned firms where we see significant changes in capital structure, we find that the declines in leverage, debt maturity, and use of long-term debt were significantly larger for SMEs in the countries with less efficient bankruptcy procedures, with less coverage, scope and accessibility of credit information sharing mechanisms (i.e., credit registries and credit bureaus), with less developed banking systems or with more stringent restrictions on bank entry.

Our findings are consistent with the literature that emphasizes the influence of a developed financial system and of the institutional environment on firms' capital structures (Caprio and Demirguc-Kunt, 1998; World Bank, 2015). Specifically, our findings suggest that having a deep banking system and a strong institutional environment help mitigate the adverse effects of financial and economic volatility, albeit in different ways for SMEs and for publicly listed

firms. Our paper is also related to studies that have explored the role of country characteristics in explaining the evolution of corporate financing during a financial crisis. For example, Bae and Goyal (2009) examine loan terms offered to firms at the time of the Asian crisis, and find that banks reduced loan maturities and raised loan spreads in countries with weak creditor rights and weak property rights.

Our finding that the decline of leverage and of long-term debt financing was particularly pronounced among privately held firms and was less significant among publicly listed firms is consistent with the view that stock markets may play the role of a “spare tire” for large firms or for publicly listed firms, by providing an alternative source of external finance and better information when the functioning of the banking system is impaired during the crisis, as suggested by Levine, Lin and Xie (2015). Relatedly, Oh and Rhee (2002) show that the development of a local bond market helped finance the activities of large corporations during the Asian crisis in the Republic of Korea. In another paper, Ayyagari, Demirguc-Kunt and Maksimovic (2011) study the role of financial markets for the recovery of large firms in a sample of financial crises. During episodes of so called credit-less recoveries, they show that cash flows rarely recover without a recovery in external credit, and that long-term debt and equity financing play an important role in this recovery. Our findings suggest that for privately-held firms, the crisis led to a significant decline in their leverage and in the maturity structure of their debt, and that, in this respect, having a bond market in place did not help SMEs. However, our findings do point to the fact that having a strong financial infrastructure, such as related to credit information sharing, insolvency regimes and the protection of investors, helped mitigate the impact of the

global financial crisis on capital structures at both ends, for large, publicly listed firms, and for SMEs as well.

The rest of the paper is organized as follows. Section II describes the data and presents some summary statistics. Section III introduces the empirical approach. Section IV discusses the empirical findings. Section V concludes.

II. Data and Summary Statistics

Our firm-level database covers the period 2004-2011 and comes from Orbis, a worldwide database compiled by Bureau Van Dijk from various national sources.^{2,3} Given our focus on the evolution of firms' capital structures since the global financial crisis, we restrict our main analysis to firms that have at least 6 consecutive years of observations, including 2011. This leaves us with a sample of 277,000 firms established in 79 countries, including 39 high income countries, 25 upper middle income countries, and 15 lower middle and low income countries.

The database is predominantly composed of privately held firms and of SMEs. In the database, 98.7 percent of firms are privately owned and about 1.3 percent of the firms (5,000 firms) are publicly listed on a stock exchange. About 85 percent of firms with employment data

² <http://www.bvdinfo.com/en-gb/our-products/company-information/international-products/orbis>

³ All firm level variables are winzorised at the bottom 5 percentile and the top 95 percentile. However, in our sample, more than 5 percent of firm observations have zero total debt or zero long-term debt, so the winsorization has no effect on the bottom percentiles of the distribution.

are SMEs (see appendix tables A1).^{4,5} At the onset of the global financial crisis in 2007, privately held firms, accounted for 30 percent of total assets and almost 40 percent of total employment in our sample. Moreover, about 60 percent of the firms, or about 160,000 firms, used long-term debt at some point in the years preceding the financial crisis. Because we are interested in examining the evolution of debt use by firms over time, this subset of firms will constitute our main sample.

Our three main variables of interest are the ratio of total debt to total assets (TDTA), the ratio of long-term debt to total asset (LTDTA), and the ratio of long-term debt to total debt (LTDTD). The first two variables capture the extent to which firms finance their assets with debt and long-term debt, respectively. The last variable captures the maturity composition of debt. A standard approach in the literature is to focus on a narrow definition of total financial debt, defined as the sum of short-term financial debt (including trade credit),⁶ plus long-term financial debt (defined as the portion of long-term debt maturing after one year). This approach has often been used in the literature, for instance by Rajan and Zingales (1995), because it is consistent with the focus on external finance in the theoretical corporate finance literature.⁷

⁴ We follow the World Bank Group Enterprise Survey definition, according to which a firm is defined as a small firm if it has between 5 and 19 employees, a medium firm if it has between 20 and 99 employees, and a large firm if it has more than 100 employees. In robustness tests, we will use a threshold of 250 employees to define a firm as an SME, consistent with the EU SME employment threshold.

⁵ The literature has shown that SMEs cover more than 50 percent of the formal workforce in developing countries and a very large share of economic activity on average (Ayyagari, Beck and Demirgüç-Kunt (2007), Ayyagari, Demirguc-Kunt, Maksimovic (2011)).

⁶ In our data, short term financial debt includes the portion of long-term financial debt maturing within the year in addition to the debt with a maturity below one year.

⁷ See also Fan, Titman and Twite (2010). An alternative approach that we do not follow in this paper is to look at the total liabilities of the firm (excluding net worth), and to assess its maturity composition, by differentiating long-term and short-term liabilities. We do not follow this approach because liabilities other than net worth and financial debt typically include other items in addition to external debt financing, such as account payables (which are related to how firms manage transactions), pension liabilities, tax items or provisions. They may be unrelated to how firms are

In our complete sample, including firms without any long-term debt prior to the crisis, the average ratios of total debt to total assets, long-term debt to total assets, and long-term debt to total debt are 0.34, 0.09, and 0.24, respectively (Table 1, panel A). But there is considerable variation in these ratios, since the standard deviations of these variables are 0.26, 0.14, and 0.31, respectively. Moreover, many firms do not have any debt in a given year: at the end of a given fiscal year, about 9 percent of firms do not have any financial debt, and about 46 percent do not have any long-term debt.

Firms tend to have lower leverage and shorter debt maturities in developing countries. The average debt to asset ratios are 0.35, 0.35, and 0.22 in high income countries, in upper middle income countries, and in lower middle and low income countries, respectively. Turning to the ratio of long-term debt to total assets, the average among all firms is 0.10 in high income countries, 0.08 in upper middle income countries, and only 0.02 in lower middle and low income countries, respectively. The average long-term debt to total debt ratios are 0.26, 0.21 and 0.07 in high income countries, in upper middle income countries, and in lower middle and low income countries, respectively.

In most of our analysis, we will focus on the firms that used long-term debt financing at least one year before the global financial crisis. Indeed, firms that did not have any long-term debt on their balance sheet during 2004-2007 were likely to be already constrained in their access

externally financed, and are also very dependent on accounting rules or other practices or laws that differ across countries.

to external finance, or may not have needed any long-term financing, and thus were less likely to be adversely affected by changes in market conditions for long-term financing.⁸

Table 1, panel B shows that, among firms that used long-term debt before the crisis, the average long-term debt to total assets and the long-term debt to total debt ratio remain larger in high income countries than in developing countries, but the differences across income groups are smaller. This may be because firms that did not use any long-term debt financing before the crisis account for a larger subset of the sample in developing countries than in high income countries. Considering only the firms using long-term debt before the crisis, we find that the average long-term debt to total assets ratios are 0.15, 0.12, and 0.10 in high income countries, in upper middle income countries, and in lower middle and low income countries, respectively. At the same time, the average ratios of long-term debt to total debt are 0.36, in high income countries, 0.29 in upper middle income countries, and 0.30, in lower middle and low income countries.

Our database allows us to construct standard firm-level determinants of capital structures that have been well established in the literature (see Rajan and Zingales, 1995; Booth et al., 2001; Demircuc-Kunt and Maksimovic, 1996, 1999). These variables aim to capture various factors underpinning firms' capital structures that are related to agency models of conflicts between insiders and outside financiers as in Jensen and Meckling (1976), Jensen (1986), Rajan (1992), Hart and Moore (1995), Diamond (2004) and asymmetric information models of external

⁸ We will present robustness tests relaxing this condition that a firm used long-term debt before the crisis.

financing as in Myers and Majluf (1984).⁹ These standard firm-level determinants of capital structure include firm size, asset tangibility, growth opportunities, and profitability.

Firm size is expected to have a positive impact on firm's capital structures since larger firms tend to have higher survival rates than smaller firms, are generally less risky and more diversified, and hence less likely to default on their debt obligations.¹⁰ Moreover, these firms are more transparent than smaller firms, because they are more likely to have adequate financial records to document their performance, and therefore should have easier access to credit. Last, various fixed costs of financial transactions or of contract enforcement often make lending to small firms more costly.

The existing empirical evidence supports the view that firms strive to match the maturity of their assets and of their liabilities (Rajan and Zingales, 1995; Booth et al, 2001). This evidence is supported by theory that suggests that the optimal payment structure for debt should match the timing of project returns (Hart and Moore 1995). Indeed, working capital and other short term investments are better financed with short-term debt, while firms with a higher proportion of tangible fixed assets in their total assets (FA/TA) require a higher proportion of long-term funding. Moreover, firms with a larger share of tangible assets that can be pledged as collateral to outside financiers to secure their claims can more easily raise longer-term debt, because the cost of defaulting on debt obligations are higher. Overall, the use of long-term debt allows firms

⁹ See Harris and Raviv (1991) for an early review of the literature.

¹⁰ For OECD cross-country evidence on firm survival rates and the relationship with size, see Bartelsman, Scarpetta, Schivardi (2003).

with a large share of fixed assets to minimize the risk of having to refinance in bad times when lenders may become reluctant to do so (Diamond 1991, 1993).

Firms with good growth opportunities, as proxied by the turnover or sales to total asset ratio (Sales/TA),¹¹ are more likely to forego profitable investment opportunities if they are more indebted and rely more on longer maturity debt. This is due to the fact that the benefits from new investments financed with risky debt accrue largely to existing debt holders rather than shareholders (Myers, 1977). Hence, we expect a negative correlation between the sales to total asset ratio and the use of long-term debt. Another explanation for a negative correlation between the turnover ratio and the use of long-term debt financing is that firms with high sales to assets in sectors such as services may have a greater need for working capital, which is best financed by short term financing.

More profitable firms may be able to grow from retained earnings and would require less external finance than other firms, according to the pecking order view (Myers and Majluf, 1984; Demircuc-Kunt and Maksimovic, 1999). On the other hand, profitable firms may have easier access to long-term finance because of their higher cash flows, and because the market for corporate control may force firms to commit to paying out cash by leveraging up (Jensen, 1986). They may also signal their higher quality by resorting to a higher proportion of short-term finance, which is relatively less costly, as its rollover risks are mitigated by the arrival of good news on the profitability of its assets (Diamond, 1991). Highly profitable firms may also require less discipline from short-term debt, especially if their profitability is positively related with the quality of their

¹¹ Profit opportunities are often proxied by the ratio of the market value of assets to book value (e.g, Rajan and Zingales, 1995) something we cannot do here because our sample includes a large sample of non-listed firms.

corporate governance (Berglof and Von Thadden, 1994). Profitability is measured by the ratio of profits before taxes and interest expenses to total assets (ROA).

Table 1 panel A and panel B present descriptive statistics on these firm characteristics. On average, among firms that used long-term debt before the global financial crisis, 38 percent of firms' assets are fixed assets, with a wide variation between the minimum which is close to zero, and the sample maximum at 84 percent. Average return on assets (ROA) is 6 percent, with a median of 4 percent, and varies between -7 percent and 38 percent. The average sales' turnover ratio is 150 percent and exhibits a large standard deviation of about 100 percent. The average total assets is 10 million USD.

III. Empirical Specifications

Characterizing the evolution of firms' capital structures

To assess the evolution of firms' capital structures since the global financial crisis, we estimate a simple empirical model linking a firm's capital structure to its observable characteristics, to a set of time invariant unobserved characteristics, and to time dummies to capture the impact of the global financial crisis period and its aftermath:

$$Y_{ijt} = \alpha + \beta \cdot Firm_Controls_{ijt} + \mu_0 \cdot Crisis_{0809t} + \mu_1 \cdot Post_Crisis_{1011t} + f_i + \varepsilon_{ijt} \quad (1)$$

Where Y_{ijt} is the total debt to assets ratio, the long-term debt to total assets ratio, or the long-term debt to total debt ratio for firm i in country j and during year t . $Firm_controls_{ijt}$ is the set of firm level control variables discussed in the previous section (i.e., the ratio of fixed assets to total assets, return over assets, the sales to assets ratio, and the total assets). $Crisis_{0809}$

is a dummy indicator variable for the global financial crisis of 2008-09, and *Post_Crisis*₁₀₁₁ is a dummy indicator for the years 2010 and 2011.¹²

Our coefficients of interest are μ_0 and μ_1 since these capture the behavior of firms' capital structure during the global crisis and subsequently. f_i is a set of firm fixed effects and ε_{ijt} is the firm level residual that is assumed to be potentially auto-correlated of order one and correlated in the cross-section at the country level as well.¹³ Indeed, the firm capital structures are quite persistent over time. In our complete sample, the correlation of the ratio of total debt to total assets, long-term debt to total assets, and long-term debt to total debt with their own lags are respectively 0.82, 0.84, and 0.85. Because of this persistence, standard OLS or fixed effects estimators will be biased. To correct the resulting bias, we use a feasible generalized least square estimator where the error terms are assumed to be serially correlated (Prais-Winsten estimator). Specifically, the error terms are assumed to follow a first-order autoregressive process $\varepsilon_{ijt} = \rho \cdot \varepsilon_{ijt} + v_{ijt}$ where v_{ijt} is the error term and ρ is the autocorrelation coefficient. The equation (1) is transformed by using the autocorrelation coefficient from the Durbin-Waston statistics. We also cluster observations of the transformed model at the country-year level. This

¹² This period also coincides with the crisis in the euro area, which started with the first bailout of Greece in May 2010.

¹³ Various papers in the recent cross-country comparative literature on corporate capital structures have relied on firm specific data, including Booth et al (2001), Fan et al. (2010), Beck et al. (2008), or on individual loan data, including Bae and Goyal (2009) and Qian and Strahan (2007).

allows us to estimate standard errors that correct for common shocks within countries, such as macroeconomic or financial shocks that affect all firms at the country level.^{14 15}

In our estimations, we distinguish between different sets of firms: publicly listed firms, privately held firms, and small and medium-sized firms, in contrast to the existing literature that has usually focused only on publicly listed firms (see for recent studies Anginer, Demirgüç-Kunt, Maksimovic, and Tepe, 2015; Levine, Lin and Xie, 2015). Publicly listed firms are in fact only a small subset (about 1 percent) of the total number of firms in our sample. These firms differ from other firms in that they are more transparent, more established, more scrutinized by market analysts, and, other things equal, tend to have easier access to debt and equity financing relative to other firms.

We estimate variations of the empirical model (1) to (a) assess whether the crisis impacted small and medium size enterprises (identified by the dummy variable SME) differently than large, privately held firms when we exclude publicly listed firms from the sample (model 2a)¹⁶ and (b) to analyze the impact of the crisis on large publicly versus large privately held firms when we exclude SMEs from the sample (model 2b).

¹⁴ Because we use firm level observations and include firm fixed effects, we are able to filter out the influence on the capital structures of time invariant or slow moving firm level characteristics, but also of country characteristics or sector characteristics. Hence, we characterize the within firm evolution since the global financial crisis of the residual portion of the capital structure that is not explained by firm observable characteristics (*Firm controls*) or by slowly moving unobserved firm characteristics (*fi*).

¹⁵ The wide variation of capital structures over time within firms has been recently documented by DeAngelo and Roll (2015) who study corporate capital structures in the US since 1950 and show that, even if the cross-sectional variation of capital structures is larger than the within firm variation, firms do experience very significant changes of capital structures over time.

¹⁶ In our sample, all SMEs are privately held firms.

$$Y_{ijt} = \alpha + \beta \cdot Firm_Controls_{ijt} + \mu_0 \cdot Crisis_{0809_t} + \mu_1 \cdot Post_Crisis_{1011_t} + \gamma_0 \cdot SME_i \cdot Crisis_{0809_t} + \gamma_1 \cdot SME_i \cdot Post_Crisis_{1011_t} + f_i + \varepsilon_{ijt} \quad (2a)$$

$$Y_{ijt} = \alpha + \beta \cdot Firm_Controls_{ijt} + \mu_0 \cdot Crisis_{0809_t} + \mu_1 \cdot Post_Crisis_{1011_t} + \delta_0 \cdot Non_Listed_i \cdot Crisis_{0809_t} + \delta_1 \cdot Non_Listed_i \cdot Post_Crisis_{1011_t} \quad (2b)$$

In the specification (2a), the average impact of the crisis and the post-crisis periods on large privately held firms is captured by μ_0 and μ_1 , respectively, while the average impact on SMEs firms is given by $\mu_0 + \gamma_0$ and $\mu_1 + \gamma_1$. Last, γ_0 and γ_1 measure the differential impact on SMEs relative to large privately held firms of the crisis period and the post-crisis period, respectively. In the specification (2b), the average impact of the crisis and the post-crisis on firms publicly listed on a stock market is given respectively by μ_0 and μ_1 , while the average impact on large privately held firms is given by $\mu_0 + \delta_0$ and $\mu_1 + \delta_1$. δ_0 and δ_1 measure the differential impact on large privately held firms relative to publicly listed firms of the crisis and post-crisis periods, respectively.

Country determinants of the impact of the crisis on capital structures of privately-held firms and SMEs

In this part of the paper, we further evaluate the impact of country characteristics on the evolution of firm's capital structures since the global financial crisis and to assess how they affect unlisted firms and among them, SMEs, building on specification (2a) in the following way.¹⁷ First,

¹⁷ For brevity we focus this part of the analysis on unlisted firms and SMEs, which experienced the most significant changes in their capital structure. Sample of large, listed firms are also distributed in a more unbalanced way across the countries in the sample, leading to reduced sample size.

we evaluate how country characteristics impacted the capital structures of privately held firms (hence dropping publicly listed firms from the sample) by estimating equation (3).

$$\begin{aligned}
Y_{ijt} = & \alpha + \beta \cdot Firm_Controls_{ijt} + \mu_0 \cdot Crisis_{0809_t} + \mu_1 \cdot Post_Crisis_{1011_t} \\
& + \gamma_0 \cdot SME_i \cdot Crisis_{0809_t} + \gamma_1 \cdot SME_i \cdot Post_Crisis_{1011_t} \\
& + \lambda_0 \cdot Crisis_{0809_t} \cdot Cty_i + \lambda_1 \cdot Post_Crisis_{1011_t} \cdot Cty_i \\
& + \varphi_0 \cdot SME_i \cdot Crisis_{0809_t} \cdot Cty_i + \varphi_1 \cdot SME_i \cdot Post_Crisis_{1011_t} \cdot Cty_i + f_i + \varepsilon_{ijt}
\end{aligned} \tag{3}$$

Where λ_0 and λ_1 are the coefficient estimates of the impact of a country characteristic Cty_i on a large privately held firm's capital structure respectively during the crisis period and during the post-crisis period. The *differential* effect of the country characteristic on an SME during the crisis period and λ_0 during the post-crisis period is given respectively by φ_0 and φ_1 , while the *total* effect on an SME is given by $\lambda_0 + \varphi_0$ and $\lambda_1 + \varphi_1$.

The literature has identified the country characteristics most likely to have first order effects on firms' capital structures (Caprio and Demirguc-Kunt, 1998; Demirgüç-Kunt and Maksimovic, 1996, 1999; Bae and Goyal, 2009; Fan, Titman, and Twite, 2012; Gopalan, Mukherjee, and Singh, 2014; Demirgüç-Kunt, Martinez Peria, and Tressel, 2015; among others). In particular, institutional factors, such as the contracting environment, including the extent to which investors are protected (such as through the strength and impartiality of the legal system) and the costs of enforcing contracts and recovering assets during bankruptcy have been found to be important determinants of firms' capital structure and, in particular, of the share of long-term debt. Some studies have also found that lending conditions are less impacted in countries with better contracting environments (Bae and Goyal, 2009). Levine, Lin and Xie (2015) provide evidence suggesting that stronger shareholder protection laws provide the legal infrastructure

for stock markets to act as alternative sources of finance when banking systems are in crisis. As discussed in the introduction, several of these characteristics could become even more relevant during a financial crisis when instability and uncertainty are heightened. To identify countries that experienced a systemic banking crisis since the onset of the global financial crisis, we use the indicators constructed by Laeven and Valencia (2010). Other country characteristics are measured as of 2008.

We consider real GDP per capita as an indicator of overall economic and institutional development. As indicator of the efficiency of the legal system in enforcing contracts and addressing insolvencies, we consider two indicators from the World Bank Doing Business Database: an indicator that estimates the average duration of bankruptcy proceedings, and an indicator that estimates the average recovery rate on assets during a bankruptcy. As indicators of investor protection, we consider the index of anti-director rights and the index of disclosure, taken again from the World Bank Doing Business Database. Last, better transparency and information sharing among lenders may also help support firms' access to external finance in general and in particular during a financial crisis. To measure this we consider the Doing Business index of depth of credit information.

Financial development has been found to exert a significant impact on the capital structure and debt maturity of firms (Demirguc-Kunt and Maksimovic, 1996, 1999) and on their performance (Demirguc-Kunt and Maksimovic, 1998), and tends to disproportionately benefit the use of external finance by smaller firms (Beck, Demirguc-Kunt, Laeven and Levine, 2005). As indicators of financial development, we consider the ratio of private credit to GDP, the ratio of stock market capitalization to GDP and the private (domestic and international) bond market

capitalization to GDP, all from the World Bank Global Financial Development Database. During episodes of banking crisis in emerging markets, the issuance of corporate bonds and the stock market infrastructure may play the role of a “spare tire” by providing an alternative source of long-term debt finance for large firms (Oh and Rhee, 2002; Chan et al., 2012). By contrast, Levine, Lin and Xie (2015) argue that a good financial infrastructure, in the form of adequate investor protection, rather than a large bond or stock market, helps support firm performance during a financial crisis.

Banking system policies – such as those related to bank competition and contestability—are expected to impact the terms and availability of bank loans, including the maturity of these loans (see Love and Martinez Peria, 2015). This would be in line with the notion that the entry of new financiers could reduce the rents that incumbent banks extract by rolling-over short-term loans (Rajan, 1992). Contestability of the banking system could matter even more during a crisis as it may affect firms’ ability to be less dependent on a pre-determined set of banking relationships and access loans from diverse lenders. To account for this effect in our estimations, we include a variable that captures the regulatory requirements for bank entry. This variable comes from Barth, Caprio and Levine (2013) and higher numbers reflect tighter regulations for bank entry.

Appendix table A2 lists the definitions and data sources for the variables used in our empirical analysis.

IV. Results

Average effect of the global financial crisis

Figures 1a and 1b illustrate the evolution of firms' capital structures at an aggregate level since the onset of the global financial crisis. Figure 1a shows changes in country averages of firm level debt ratios between the pre-crisis period (04-07) and the global crisis (08-09) or post-crisis (10-11) periods, by size category of firms (large firms, SMEs). In the top two charts, we keep only the firms with strictly positive total leverage before the crisis, and in the following charts, we keep only the firms with strictly positive long-term debt before the crisis as in the main econometric analysis.¹⁸

What is apparent from Figure 1a is that, both in advanced economies and in developing countries, there was a significant decline in total firm leverage, and in the ratio of long-term debt to total assets. The decline was larger for SMEs than for large firms. Looking at the evolution of LTDTD, we find that this ratio declined both in high income countries and in developing countries, and even more so in the second group of countries, as expected. The decline was also more marked for SMEs than for large firms. The decline started in 2008-09 but continued in 2010-11, across a broad group of countries. Some of these average declines in leverage or in the use of long-term debt financing are in fact very large. Most strikingly, these declines of about 2.2 percentage points of the ratio of long-term debt to total assets between 2004-2007 relative to 2010-2011 among SMEs in developing countries are very large, since they represent about 25

¹⁸ The figure is constructed by first averaging firm capital structures during the relevant period, taking first differences, and averaging the first differences by country. The country numbers are next averaged by income groups.

percent of the entire sample average of LTDTA and about 50 percent of the developing countries' sample average.

Figure 1b replicates the same descriptive analysis, but instead splits firms into two groups according to their type of incorporation (e.g. privately held or publicly listed on a stock exchange). We find that firms listed on a stock market seem to have, on average, experienced a much more moderate decline in leverage, in the use of long-term debt, and in the maturity composition of debt than privately held firms. These differences are particularly noticeable for high income countries. This suggests that the distinction between publicly listed firms and privately held firms may be particularly important, independently of their size. Given these interesting trends in the variables of interest, we now turn to a more rigorous empirical analysis to investigate to what extent these stylized facts are confirmed by the econometric analysis described above.

Table 2 reports regressions of equation (1), estimating the average within firm impact on the capital structures ratios (TDTA, LTDTA, and LTDTD) of the global financial crisis (2008-09), and of the post-crisis period (2010-11), after controlling for firms' characteristics and unobserved firm fixed effects. We present results for the set of firms that used strictly positive amounts of long-term debt at least once before the global financial crisis. The results are organized as follows. We first present estimates for firms in all countries and then by income groups. We also show results for countries that did not experience a systemic banking crisis to show that our results are very widespread across countries.¹⁹ The inclusion of firm fixed effects accounts for all unobserved

¹⁹ When looking at the group of high income countries (to which most of the countries that have experienced a systemic banking crisis since 2008 belong to), we looked at the countries that did not experience a systemic banking crisis. Looking at this group is useful because it tells us whether the changes we may identify among the crisis countries could be taking place more generally in other high income countries. A few developing countries (Kazakhstan, Nigeria, Russia and Ukraine) also experienced a systemic banking crisis during the period 2004-2011

firm-level time invariant factors that may affect capital structures, which would for instance include initial firm conditions (such as initial performance, initial capital structures), in addition to the firm characteristics described above. These firm fixed effects also absorb the impact of time invariant country characteristics on capital structures. The log of GDP per capita is included as an additional explanatory variable to control for the macroeconomic effect of the evolution over time (e.g., after filtering out firm fixed effects) of output per capita. The table shows three panels, one for each of the three different debt ratios we examine: panel A shows results for the TDTA ratio, panel B presents results for LTDTA, and panel C shows results for LTDTD.

Examining the results in Table 2, we see that the two debt ratios (TDTA, LTDTA) and the maturity ratio (LTDTD) all declined on average during the global financial crisis, and remained significantly below their pre-crisis level in 2010-11.²⁰ These declines happened in high income countries (column (2)), in upper middle income countries (column (4)) and in lower middle and low income countries (column (5)). They also took place in countries that did not experience a systemic banking crisis (columns (6) and (7)). The changes in capital structures relative to the pre-crisis period are also very significant economically. In 2010-11, the decline in the leverage ratio (TDTA) reached 3 percentage points in high income countries (column (2) of panel A) and 7 percentage points on average in developing countries (column (3) of panel A). A large part of the decline was driven by the reduction in the use of long-term debt (panel B), which was ultimately reflected in the maturity ratio (panel C), e.g. a decline in the average LTDTD of 2.5 percentage

according to Laeven and Valencia (2012). All other crisis countries are high income countries that experienced a systemic banking crisis in 2008 or afterwards.

²⁰ Results for TD/TA are very similar if we restrict the sample to firms with positive total debt before the crisis (results not reported).

points in high income countries and of 9 percentage points in developing countries in 2010-11 relative to the pre-crisis period. Thus, the maturity composition effect was particularly large in developing countries (where the infrastructure of the contracting environment is on average the weakest).

These findings hold after controlling for the deviation of various firms characteristics relative to their sample average. This means that we are controlling for the possibility that capital structures may have changed since the crisis simply because firms experienced changes in profitability, in their ratio of fixed assets to total assets, the sales turnover or size which also impacted their capital structures. The coefficients on the firm level control variables are consistent with the predictions and findings of the existing literature (see for instance, Demirguc-Kunt and Maksimovic, 1999; Booth et al., 2001; and Demirguc-Kunt, Martinez-Peria and Tressel, 2015, for in-depth discussions). Within firms, a higher proportion of fixed assets tends to be associated with a higher ratio of long-term debt to total assets, and a higher proportion of long-term debt to total debt. However, the association between the ratio of fixed assets to total assets and the leverage ratio appears to change across income groups. It is positive in high income countries, but it is negative developing countries. Given that the leverage ratio combines the use of short-term debt and of long-term debt, the expected association between the FATA ratio and leverage is ambiguous. In high income countries, where firms use more long-term debt than their counterpart in developing countries, an increase in FATA may be associated with greater use of long-term debt which increases leverage. In developing countries, an increase in the FATA ratio may be associated with lower leverage, because firms may increase long-term debt by reducing their overall leverage. We find that firms that become more profitable tend to reduce leverage,

and their use of long-term debt. An increase in firm size tends to be associated with higher leverage and longer debt maturities, while firms that increase sales' turnover reduce their overall indebtedness and rely on shorter debt maturities, as expected.

Overall, in this section we find that the global financial crisis had a significant impact on firms' capital structures around the world, across various income groups, after controlling for firm characteristics, including their performance.

The impact of the global financial crisis by type of firm

In this section, we try to uncover the extent to which the global financial crisis had different impacts across different types of firms. Our main focus is on the size of the firm – whether a firm is an SME or not -- and on the ownership structure of the firms – whether a firm is listed on a stock exchange or is privately held.²¹ In particular, we study whether SMEs' capital structures were more affected than those of large private firms, to test the view that SMEs may be more subject to the adverse effects of a credit crunch than larger firms, because of their dependence on a few selective banking relationships due to their intrinsic opaqueness. Also, we investigate if the impact of the crisis significantly differed for firms listed on a stock exchange and for privately held firms, thus testing the hypothesis that the former subset of firms may have

²¹ In robustness tests, we also examine whether the impact of the global financial crisis on firms differed depending on firms' initial leverage (as firms initially more indebted may be more likely to reduce their use of long-term finance and their overall leverage) or by their initial productivity (as a potential decline in the availability) of long-term finance may have impacted low productivity firms more than others.

benefited from access to capital market financing as a substitute for bank finance (the “spare tire” hypothesis).

To facilitate the analysis, in Table 3, we drop the firms that are listed on a stock exchange and investigate the impact of the financial crisis on the capital structures of large privately held firms and of SMEs. We find that by 2010-11 the leverage of firms had declined relative to the pre-crisis period in all income groups and also in countries that did not experience a systemic banking crisis. The decline was economically and statistically significant, in the range of 4 percentage points. Moreover, we find that, in middle and low income countries, SMEs’ leverage declined significantly more than the leverage of large firms, by an additional 2 to 4 percentage points (columns 4 and 5 of panel A), depending on the specification. As shown in panel B, the use of long-term debt also declined significantly in all income groups, and in 2010-11, the ratio was lower by 1.5 percentage points in high income countries and 3.5 percentage points in upper middle income countries, relative to their pre-crisis average. This decline was even larger for SMEs in lower middle and low income countries. Turning to the maturity structure (panel C) of firms’ debt, we find that the ratio of LTDTD declined on average in all income groups, and that the decline was larger in developing countries than in high income countries. SMEs seemed to experience an additional reduction of debt maturity in lower middle and low income countries.

Table 4 shows the estimations focusing on the sample of large firms (e.g. dropping SMEs), where we differentiate non-listed firms from firms that are listed on a stock market. We find that the leverage of listed firms did not decline during the global financial crisis, but declined in high income countries in 2010-11 relative to the pre-crisis period. The leverage of privately held firms declined significantly more relative to that for listed firms both during the global crisis and in

2010-11 in high income countries and in upper middle income countries. This relative decline of leverage for large privately held firms was economically significant: 2 percentage points in high income countries, and 4 percentage points in upper middle income countries. Turning to the ratio of long-term debt to total assets, we found that a decline occurred for listed firms in high income countries and in lower middle and low income countries after the crisis relative to the pre-crisis average. The decline was again significantly larger for non-listed firms in high income countries and in upper middle income countries. Finally, the debt maturity of listed firms in developing countries was lower in 2010-11 than their pre-crisis average. It was lower for non-listed firms in high income countries and in upper-middle income countries.

Table 5 and 6 report robustness tests for the results of Table 3 and 4. In Table 5, we report robustness tests for Table 3, first changing the threshold defining SMEs from 100 employees to 250 employees; and second keeping in the sample the firms that disappeared in 2011. In table 6, we report robustness tests for table 4. First, we add an interaction of the crisis and post-crisis dummy with the average total asset of each firm.²² By doing so, we are able to assess the relevance of being listed on a stock market or not while controlling for the impact of the crisis by firm size. Second, we keep in the sample the firms that do not have data for 2011. We find that our main findings do not change significantly.²³

Tables 7 and 8 present additional robustness tests – e.g. whether our findings related to the incorporation of the firm (listed or not-listed) and to the size of the firm may in fact be related

²² This additional interaction term is not reported to simplify the exposition of the key results in the table.

²³ We also find positive coefficients on the interaction term between the crisis or post-crisis dummy and the average firm size. This confirms our finding that size was also a determinant of the impact of the crisis.

to other features of the firms that may have been relevant in time of crisis. In Table 7, we examine the interaction of the crisis dummies with an indicator for the initial (2007) leverage of firms. Specifically, we created a dummy variable equal to one whenever a firm's leverage in 2007 was above the median of firms' leverage in the country group considered. There is indeed a view that some firms may have experienced debt overhang as a result of the crisis (Kalemli-Ozcan, Laeven and Moreno, 2015). This view suggests that firms that were more indebted would have been more likely to reduce their indebtedness. The results in Table 7 show that our main conclusions are not altered when we control for the impact of initial leverage. But we also find support for the view that some of the deleveraging may be the consequence of a debt overhang in the balance sheet of some firms. Surprisingly, we find that firms that were initially more indebted experienced a smaller reduction in debt maturity (LTDTD) relative to the pre-crisis average than other firms.

In Table 8, we explore whether firms with initially lower productivity may have been more impacted and experienced greater deleveraging than others by the crisis. Indeed, there is evidence that economic crises, including financial crises, can "cleanse out" entrenched inefficiencies by reallocating resources and cutting access to finance of less efficient firms, which will eventually contribute to overall productivity growth (Caballero and Hammour, 1994). An implication of this view is that the supply of credit, and especially of long-term credit, should have declined relatively more for firms that were initially less productive. When splitting each subsample of firms by the median labor productivity in addition to the size or incorporation dimension, we find that our results are robust and that there is little evidence supporting the "cleansing hypothesis".

Country determinants of the evolution of capital structures

Table 9 summarizes the estimations of equation (3) where we assess the extent to which SMEs' and non-listed firms' capital structure react differently to the crisis depending on various country characteristics. In Panel A, we find that the difference in deleveraging between large firms and SMEs was more positive in countries with higher incomes (column 2), deeper banking systems (column 3), with better investor protection (column 7), with faster insolvency proceedings (column 9), with better credit information (column 10) and in countries with less country risk (column 11), suggesting that in countries with such characteristics, SMEs' access to debt finance was less adversely affected relative to that of large firms.

In Panel B, we show that the decline in the ratio of LTDTA was more muted for SMEs in countries with higher incomes, more efficient bankruptcy procedures, deeper banking systems, stronger protection of investor rights, higher quality credit information mechanisms, and greater contestability of the banking system. An SME located in a country with better characteristics along one of these dimension would experience a significantly smaller reduction in its use of long-term debt relative to a large firm than an otherwise similar SME located in another country. We do not find that the evolution of the capital structures of firms located in the countries that experienced a systemic banking crisis differed from the evolution of capital structures in other countries.

Panel C in Table 9 reports the regressions with LTDTD as the dependent variable. We find that LTDTD declines more among SMEs in countries with less contestable banking systems, less efficient bankruptcy regimes and, surprisingly, deeper bond markets.²⁴

The estimated effects reported in Table 9a, b, and c are economically significant. For example, considering the estimates of the differential effect of country characteristics on SMEs' capital structure, the coefficients imply that a one standard deviation increase in the private credit to GDP ratio, the log of real GDP per capita, the time to resolve insolvencies, and the depth of credit information would be associated with a change in the leverage ratio TDTA of SMEs relative to large firms of respectively 1.6 percentage points, 1.7 percentage points, -1.2 percentage points, 1.5 percentage points, and 1.0 percentage points. The same exercise for the private credit to GDP ratio, the index of entry requirements, the time to resolve insolvencies, and the depth of credit information index would be associated with a change in the long-term debt to asset ratio LTDTA of respectively 0.7 percentage points, -0.7 percentage points, -0.8 percentage points, and 0.7 percentage points. Last a one standard increase in the size of the private bond markets, in the time to resolve insolvencies would be associated with a change in the debt maturity LTDTD of SMEs relative to that of large firms respectively by -2.2 percentage points and -3.4 percentage points.

These findings are broadly robust to various specification changes (appendix table A3), such as: (1) removing the restriction that firms should have strictly positive LTD at least one year before the crisis; (2) including in the sample the firms that disappeared in 2011; (3) using a 250

²⁴ This may suggest that in countries with deeper private bond markets, banks specialize in lending at shorter maturities, as suggested by Diamond (1991), and that this maturity effect is reinforced during a financial crisis.

employee threshold to define SMEs instead of a 100 employee threshold; (4) controlling for the interaction of the crisis and post-crisis dummy with log of real GDP per capita.

In Table 10, we report regressions in which country characteristics that have significant coefficients are considered simultaneously in the estimation. Many of these country characteristics are quite correlated with each other, so significance of the estimated coefficients should be expected to drop. Nonetheless, the point estimates are generally stable and some of these variables remain consistently significant. The results show that indicators of the financial infrastructure (credit information, efficiency of the bankruptcy process) and the indicator of contestability of the banking system yield significant coefficients, in particular in the interaction term with the SME dummy.

V. Conclusion

This paper establishes new stylized facts on the evolution of corporate financing structures during the global financial crisis of 2008-09 and its aftermath of 2010-11. We find evidence of a widespread deleveraging of firms in developing countries and in high income countries. This deleveraging was associated with a reduction in the use of long-term debt finance, both in high income and in developing countries, including in countries that did not experience a banking crisis. These changes were particularly significant for firms that did not have access to capital market financing, while the changes were more moderate for publicly listed firms.

We also find robust evidence that the extent of deleveraging and the reduction in debt maturity of privately held firms, in particular SMEs, was larger in countries with shallower banking systems, with weaker legal systems for bankruptcy, weaker investor protection, lower quality of

credit information, and with more restrictions on bank entry. In contrast, there is weaker evidence of a significant decline of leverage and debt maturity among firms listed on a stock exchange, which are typically much larger than other firms and likely benefit from the “spare tire” of easier access to capital market financing. Overall, the evidence suggests that policies affecting financial infrastructures, perhaps more than direct exposure to the crisis environment, had significant effects on firms’ capital structures. The evidence also supports the view that capital markets may provide a “spare tire” in time of financial crisis for large, publicly listed firms.

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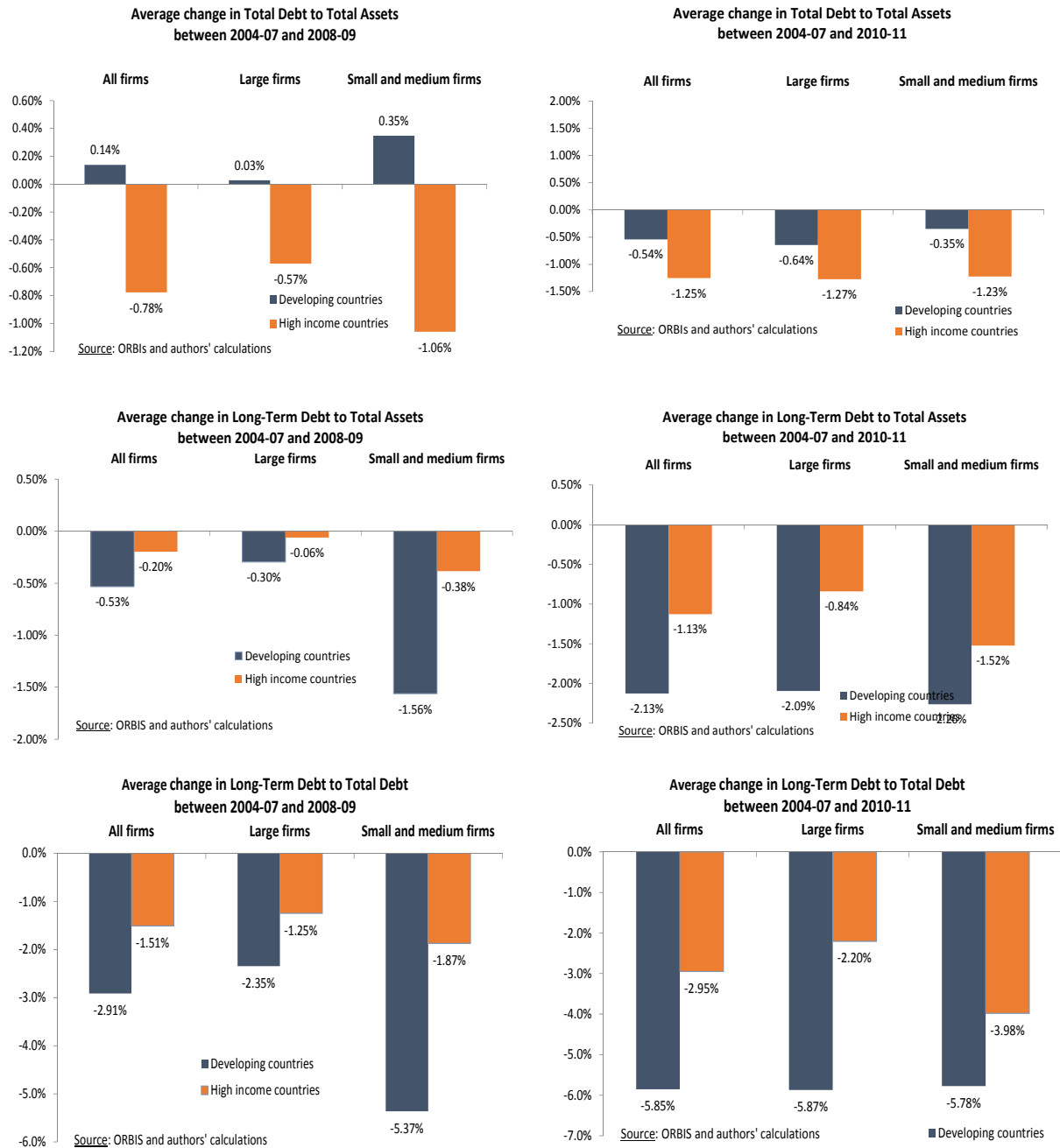
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**Figure 1a. Average changes in capital structures by firm size
(Income group averages)**



**Figure 1b. Average changes in capital structures by ownership type
(Income group averages)**

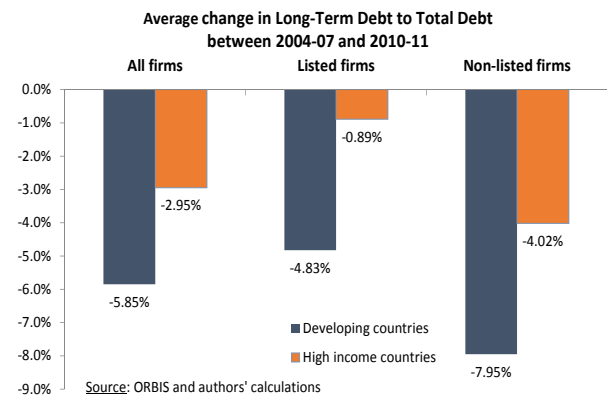
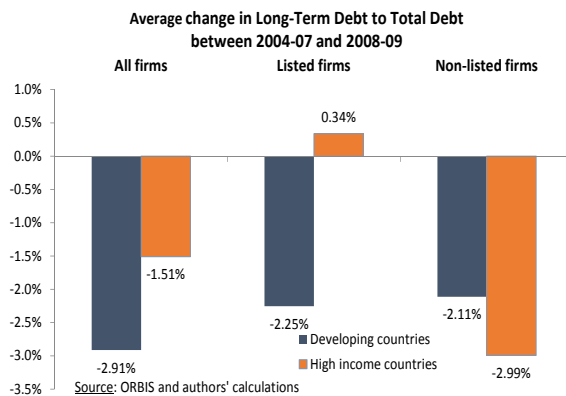
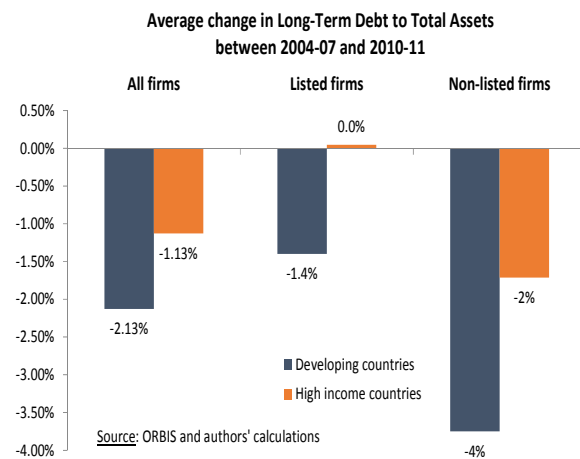
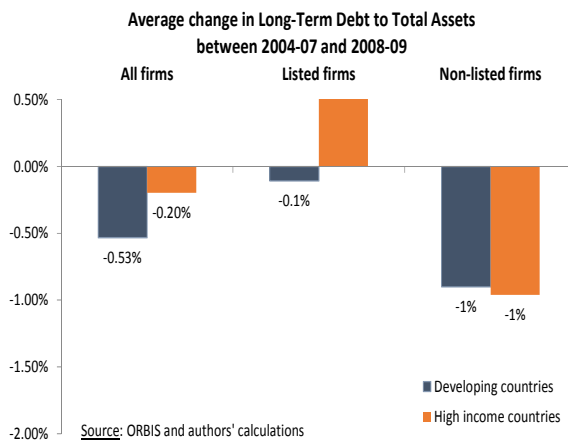
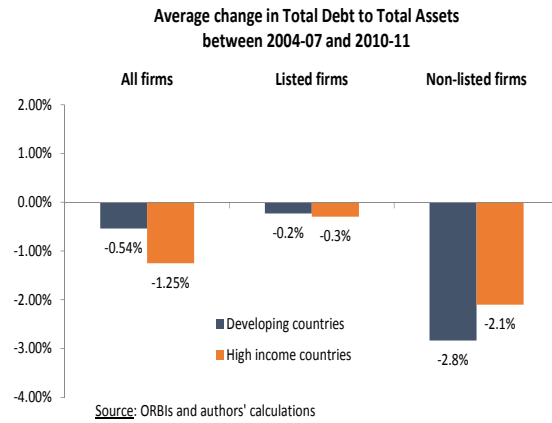
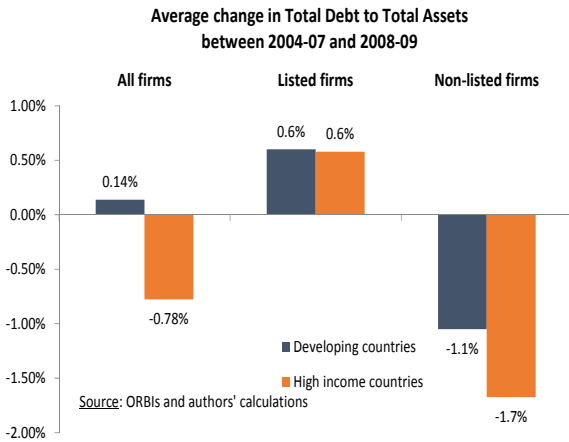


Table 1. Summary statistics: Firm capital structure ratios

	Panel A. All observations						Panel B. Sample firms with pre-crisis LTD>0					
	Obs.	Mean	Median	Std. Dev.	Min	Max	Obs.	Mean	Median	Std. Dev.	Min	Max
Capital structure variables												
							<i>Complete sample</i>					
TD/TA	2,096,061	0.34	0.32	0.26	0.00	0.79	1,245,588	0.42	0.43	0.24	0.00	0.79
LTD/TA	2,096,061	0.09	0.00	0.14	0.00	0.48	1,245,588	0.15	0.10	0.15	0.00	0.48
LTD/TD	1,859,286	0.24	0.07	0.31	0.00	1.00	1,188,265	0.36	0.29	0.32	0.00	1.00
							<i>High-income</i>					
TD/TA	1,765,814	0.35	0.34	0.26	0.00	0.79	1,126,209	0.42	0.44	0.24	0.00	0.79
LTD/TA	1,765,814	0.10	0.01	0.14	0.00	0.48	1,126,209	0.15	0.10	0.15	0.00	0.48
LTD/TD	1,563,768	0.26	0.12	0.32	0.00	1.00	1,075,210	0.36	0.30	0.32	0.00	1.00
							<i>Upper middle income</i>					
TD/TA	116,885	0.35	0.34	0.25	0.00	0.79	75,807	0.40	0.41	0.24	0.00	0.79
LTD/TA	116,885	0.08	0.00	0.13	0.00	0.48	75,807	0.12	0.06	0.14	0.00	0.48
LTD/TD	105,194	0.21	0.04	0.28	0.00	1.00	70,127	0.29	0.20	0.30	0.00	1.00
							<i>Lower Middle and Low Income</i>					
TD/TA	213,362	0.22	0.12	0.24	0.00	0.79	43,572	0.30	0.25	0.24	0.00	0.79
LTD/TA	213,362	0.02	0.00	0.08	0.00	0.48	43,572	0.10	0.03	0.14	0.00	0.48
LTD/TD	190,324	0.07	0.00	0.21	0.00	1.00	42,928	0.30	0.16	0.34	0.00	1.00
Other variables												
FA/TA	2,097,372	0.33	0.29	0.25	0.00	0.84	1,246,682	0.38	0.35	0.24	0.00	0.84
ROA - Return on assets	2,097,372	0.08	0.04	0.10	-0.07	0.38	1,246,682	0.06	0.04	0.08	-0.07	0.38
Sales/TA	2,097,372	1.63	1.35	1.17	0.09	5.09	1,246,682	1.50	1.28	1.03	0.09	5.09
Cash/TA	2,058,656	0.15	0.07	9.27	0.00	13302	1,229,780	0.13	0.06	12.00	0.00	13302
Total assets (mil. USD)	2,097,372	0.06	0.00	1.69	0.00	331.05	1,246,682	0.10	0.00	2.19	0.00	331.05
SME	1,843,586	85%	.	.	.	.	1,138,327	83%	.	.	.	.
Listed	2,097,372	2%	.	.	.	.	1,246,682	3%	.	.	.	.
Non-Listed	2,097,372	98%	.	.	.	.	1,246,682	97%	.	.	.	.
Crisis year (08-09)	2,097,372	48%	.	.	.	.	1,246,682	48%	.	.	.	.
Crisis years (10-11)	2,097,372	26%	.	.	.	.	1,246,682	26%	.	.	.	.
High Income	2,097,372	84%	.	.	.	.	1,246,682	90%	.	.	.	.
Upper Middle Income	2,097,372	6%	.	.	.	.	1,246,682	6%	.	.	.	.
Lower Middle and Low Inc.	2,097,372	10%	.	.	.	.	1,246,682	3%	.	.	.	.

Source: ORBIS and authors' calculations.

Table 2. Average impact of the crisis on firms' capital structures

(Firms with strictly positive LTD before 2008)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	HI	DEV	UMI	LMILI	HI no crisis	DEV no crisis
Panel A: TD/TA							
Fixed assets to total assets	0.0392**	0.0541***	-0.0646***	-0.0271**	-0.125***	0.0841***	-0.0263**
Return over assets	-0.319***	-0.314***	-0.350***	-0.354***	-0.350***	-0.337***	-0.353***
Sales to total assets	-0.0186***	-0.0207***	-0.00798***	-0.0102***	-0.00510	-0.0191***	-0.00975***
Total assets	0.000943***	0.00113***	0.000816*	0.00109**	-0.000947	0.00253***	0.00105*
log of GDP per capita	0.0521	0.0898	0.0774*	0.0431	0.141**	-0.0410	0.0686
Dummy 2008-09=1	-0.0259**	-0.0245*	-0.0400***	-0.0540***	-0.0155	-0.0241***	-0.0541***
Dummy 2010-11=1	-0.0357**	-0.0325*	-0.0746***	-0.0910***	-0.0466***	-0.0354***	-0.0906***
Observations	1,245,588	1,126,209	119,379	75,807	43,572	501,417	78,940
R-squared	0.037	0.036	0.065	0.068	0.083	0.088	0.065
Panel B: LTD/TA							
Fixed assets to total assets	0.199***	0.210***	0.115***	0.145***	0.0620***	0.230***	0.139***
Return over assets	-0.103***	-0.106***	-0.0935***	-0.102***	-0.0865***	-0.111***	-0.0987***
Sales to total assets	-0.0207***	-0.0216***	-0.0156***	-0.0167***	-0.0130***	-0.0180***	-0.0169***
Total assets	0.000925***	0.00114***	0.000502*	0.000639**	-0.00498*	0.00192***	0.000778**
log of GDP per capita	0.000803	0.00411	0.0709**	0.0714**	0.0816	-0.0244	0.0341
Dummy 2008-09=1	-0.00855**	-0.00786**	-0.0214***	-0.0292***	-0.00924	-0.00641***	-0.0255***
Dummy 2010-11=1	-0.0156***	-0.0134***	-0.0476***	-0.0512***	-0.0438***	-0.0124***	-0.0547***
Observations	1,245,588	1,126,209	119,379	75,807	43,572	501,417	78,940
R-squared	0.071	0.076	0.055	0.063	0.051	0.099	0.066
Panel C: LTD/TD							
Fixed assets to total assets	0.431***	0.446***	0.317***	0.349***	0.255***	0.451***	0.329***
Return over assets	-0.0332***	-0.0385***	-0.00971	-0.0429***	0.0322	0.0152	-0.0260
Sales to total assets	-0.0326***	-0.0323***	-0.0347***	-0.0338***	-0.0326***	-0.0257***	-0.0361***
Total assets	0.00188***	0.00218***	0.00113**	0.00126***	-0.00999*	0.00434***	0.00164***
log of GDP per capita	-0.0156	-0.0404	0.166*	0.0990**	0.220	-0.0146	-0.0325
Dummy 2008-09=1	-0.0141***	-0.0134***	-0.0357***	-0.0291***	-0.0411**	-0.00451	-0.0159
Dummy 2010-11=1	-0.0301***	-0.0259***	-0.0929***	-0.0580***	-0.141***	-0.0144**	-0.0665***
Observations	1,188,265	1,075,210	113,055	70,127	42,928	495,780	73,247
R-squared	0.048	0.050	0.045	0.049	0.051	0.053	0.051

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. A firm is included in the sample if it had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data, including 2011. Columns are organized as follows: high income countries (column 2), developing countries (column 3), upper middle income countries (column 4), lower middle and low income countries (column 5), high income countries that did not experienced a crisis (column 6), developing countries that did not experience a crisis (column 7). A country is a crisis country if it has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 3. Impact of the crisis on firms' capital structures for SMEs and large firms

(Sample of privately held firms only)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	HI	DEV	UMI	LMILI	HI no crisis	DEV no crisis
Panel A: TD/TA							
Fixed assets to total assets	0.0287*	0.0405**	-0.0760***	-0.0298*	-0.131***	0.0795***	-0.0346**
Return over assets	-0.324***	-0.321***	-0.350***	-0.361***	-0.339***	-0.341***	-0.354***
Sales to total assets	-0.0187***	-0.0207***	-0.00529*	-0.00559	-0.00498	-0.0191***	-0.00525
Total assets	0.00400***	0.00679***	0.00182***	0.00215***	-0.000696	0.0188***	0.00178***
log of GDP per capita	0.0740	0.0794	0.108**	0.0471	0.168**	-0.0428	0.0840*
Dummy 2008-09=1	-0.0238***	-0.0274***	-0.00977	-0.0240***	-0.00245	-0.0251***	-0.0265***
Dummy 2010-11=1	-0.0374***	-0.0387***	-0.0373***	-0.0469***	-0.0338***	-0.0379***	-0.0499***
SME * dummy 08-09	0.000534	0.00448	-0.0243***	-0.00737	-0.0307***	0.00164	-0.00820
SME * dummy 10-11	0.00644	0.00940	-0.0327***	-0.0183**	-0.0394***	0.00376	-0.0198**
Observations	1,108,882	1,031,664	77,218	42,200	35,018	482,296	38,870
R-squared	0.038	0.036	0.075	0.067	0.094	0.089	0.063
Panel B: LTD/TA							
Fixed assets to total assets	0.207***	0.214***	0.137***	0.188***	0.0743***	0.233***	0.186***
Return over assets	-0.100***	-0.103***	-0.0892***	-0.0985***	-0.0820***	-0.110***	-0.0930***
Sales to total assets	-0.0204***	-0.0211***	-0.0148***	-0.0162***	-0.0128***	-0.0180***	-0.0154***
Total assets	0.00263***	0.00395***	0.00141***	0.00163***	0.00190	0.00858***	0.00130***
log of GDP per capita	0.0184	-0.00825	0.142***	0.102***	0.180***	-0.0275	0.146***
Dummy 2008-09=1	-0.00714***	-0.00842***	-0.00815**	-0.0153***	-0.00509*	-0.00909***	-0.0204***
Dummy 2010-11=1	-0.0148***	-0.0142***	-0.0277***	-0.0357***	-0.0252***	-0.0151***	-0.0425***
SME * dummy 08-09	0.000680	0.00194	-0.0118***	-0.00117	-0.0182***	0.00348	-0.000575
SME * dummy 10-11	0.00287	0.00320	-0.0123***	0.00102	-0.0227***	0.00412	0.00135
Observations	1,108,882	1,031,664	77,218	42,200	35,018	482,296	38,870
R-squared	0.076	0.080	0.062	0.075	0.058	0.101	0.074
Panel C: LTD/TD							
Fixed assets to total assets	0.440***	0.448***	0.361***	0.409***	0.297***	0.458***	0.405***
Return over assets	-0.0242**	-0.0288***	-0.00952	-0.0430***	0.0311	0.0203*	-0.0321**
Sales to total assets	-0.0307***	-0.0302***	-0.0346***	-0.0359***	-0.0323***	-0.0252***	-0.0350***
Total assets	0.00461***	0.00482*	0.00387***	0.00370***	0.0673**	0.00895	0.00329***
log of GDP per capita	-0.00218	-0.0672	0.324***	0.139**	0.464***	-0.0208	0.189***
Dummy 2008-09=1	-0.0125***	-0.0111***	-0.0355***	-0.0227***	-0.0411**	-0.0120***	-0.0290***
Dummy 2010-11=1	-0.0296***	-0.0214***	-0.0908***	-0.0688***	-0.103***	-0.0213***	-0.0783***
SME * dummy 08-09	0.000656	-0.000119	-0.0167	-0.00516	-0.0343***	0.00904*	-0.00477
SME * dummy 10-11	0.00541	-1.58e-05	-0.00567	0.00981	-0.0439***	0.00941*	0.0106
Observations	1,065,481	989,391	76,090	41,696	34,394	477,429	38,372
R-squared	0.049	0.050	0.052	0.061	0.053	0.054	0.060

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. A firm is included in the sample if it is privately held, if it had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data, including 2011. Columns are organized as follows: high income countries (column 2), developing countries (column 3), upper middle income countries (column 4), and lower middle and low income countries (column 5), high income countries that did not experienced a crisis (column 6), developing countries that did not experience a crisis (column 7). A country is a crisis country if it has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). A firm is classified as an SME if it had on average less than 100 employees during the period of observation. Significance levels: ***: p<0.01, **: p<0.05, *: p<0.1. (Standard errors are in parenthesis).

Table 4. Impact of the crisis on firms' capital structures for privately held and publicly listed firms

	(Large firms only)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ALL	HI	DEV	UMI	LMILI	HI no crisis	DEV no crisis
Panel A: TD/TA							
Fixed assets to total assets	-0.0392***	-0.00402	-0.113***	-0.0207	-0.167***	-0.0216	-0.00809
Return over assets	-0.352***	-0.349***	-0.358***	-0.383***	-0.350***	-0.367***	-0.399***
Sales to total assets	-0.0120***	-0.0136***	-0.00688*	-0.00477	-0.00819	-0.0120***	-0.00538
Total assets	0.000570***	0.000896***	-0.000224	-5.40e-05	-0.0115*	0.00182***	-2.60e-05
log of GDP per capita	0.0793***	0.0487	0.0965**	0.0441**	0.159***	0.00508	0.0352
Dummy 2008-09=1	-0.00314	-0.00505	-0.00250	-0.000195	-0.000702	-0.00803*	-0.00226
Dummy 2010-11=1	-0.0142***	-0.0159***	-0.0149*	-0.00430	-0.0199	-0.0214***	-0.00823
Non-listed firm * dummy 08-09	-0.0194***	-0.0209***	-0.00693	-0.0234***	-0.00212	-0.0166***	-0.0204**
Non-listed firm * dummy 10-11	-0.0222***	-0.0203***	-0.0221***	-0.0417***	-0.0143	-0.0177***	-0.0351***
Observations	192,329	152,229	40,100	16,983	23,117	82,366	18,027
R-squared	0.057	0.055	0.071	0.059	0.091	0.079	0.058
Panel B: LTD/TA							
Fixed assets to total assets	0.143***	0.165***	0.0945***	0.154***	0.0583***	0.167***	0.162***
Return over assets	-0.106***	-0.114***	-0.0945***	-0.114***	-0.0889***	-0.113***	-0.111***
Sales to total assets	-0.0197***	-0.0186***	-0.0212***	-0.0260***	-0.0190***	-0.0155***	-0.0253***
Total assets	0.000792***	0.00104***	6.16e-05	9.46e-05	-0.0117***	0.00177***	0.000294
log of GDP per capita	0.0366*	-0.0168	0.0975***	0.0410***	0.153***	-0.0175	0.0291
Dummy 2008-09=1	0.00151	0.00356*	-0.00864*	-0.00472	-0.00745	0.00282	-0.00301
Dummy 2010-11=1	-0.00991**	-0.00446**	-0.0292***	-0.00389	-0.0553**	-0.00624	-0.0229**
Non-listed firm * dummy 08-09	-0.00839***	-0.0112***	0.00210	-0.00609	0.00255	-0.0114***	-0.00724
Non-listed firm * dummy 10-11	-0.00558	-0.00891***	0.00401	-0.0261***	0.0312	-0.00901***	-0.00505
Observations	192,329	152,229	40,100	16,983	23,117	82,366	18,027
R-squared	0.056	0.064	0.049	0.069	0.052	0.072	0.068
Panel C: LTD/TD							
Fixed assets to total assets	0.368***	0.390***	0.305***	0.348***	0.276***	0.398***	0.351***
Return over assets	-0.0436***	-0.0779***	0.00753	-0.0672**	0.0389	-0.0538**	-0.0519*
Sales to total assets	-0.0384***	-0.0332***	-0.0499***	-0.0578***	-0.0456***	-0.0260***	-0.0556***
Total assets	0.00165***	0.00179***	0.000765**	0.000829***	-0.0211***	0.00428***	0.00124***
log of GDP per capita	0.0348	-0.0962**	0.233***	0.0241	0.408***	-0.0620	0.00519
Dummy 2008-09=1	-0.00129	0.00919**	-0.0403***	-0.0154*	-0.0490**	0.00403	-0.0128
Dummy 2010-11=1	-0.0200*	-5.58e-05	-0.0873***	-0.00401	-0.166***	-0.00457	-0.0527*
Non-listed firm * dummy 08-09	-0.0120**	-0.0201***	0.00839	0.000742	0.00888	-0.0156***	-0.000620
Non-listed firm * dummy 10-11	-0.0120	-0.0209***	0.00189	-0.0552***	0.0669	-0.0152**	-0.00433
Observations	190,535	150,686	39,849	16,900	22,949	81,890	17,940
R-squared	0.039	0.044	0.042	0.053	0.047	0.044	0.052

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. A firm is included in the sample if it is a large firm (average employment greater or equal to 100), if it had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data, including 2011. Columns are organized as follows: high income countries (column 2), developing countries (column 3), upper middle income countries (column 4), lower middle and low income countries (column 5), high income countries that did not experienced a crisis (column 6), developing countries that did not experience a crisis (column 7). Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 5. Robustness impact of the crisis on firms' capital structures for SMEs and large firms
(privately held firms only)

	SME threshold: <250 employees			Criteria firm present in 2011 dropped		
	HI	UMI	LMILI	HI	UMI	LMILI
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: TD/TA						
Dummy 2008-09=1	-0.0271***	-0.0215**	0.00400	-0.0285***	-0.0197**	-0.000446
Dummy 2010-11=1	-0.0395***	-0.0271**	-0.0225***	-0.0393***	-0.0440***	-0.0295***
SME * dummy 08-09	0.00370	-0.00878	-0.0257***	0.00630	-0.00955	-0.0307***
SME * dummy 10-11	0.00934	-0.0370***	-0.0367***	0.00998	-0.0146*	-0.0408***
Observations	1,031,664	42,200	35,018	1,215,143	60,786	40,626
R-squared	0.036	0.067	0.092	0.036	0.066	0.087
Panel B: LTD/TA						
Dummy 2008-09=1	-0.0103***	-0.0149***	0.00184	-0.00855***	-0.0161***	-0.00379
Dummy 2010-11=1	-0.0160***	-0.0340***	-0.0141**	-0.0143***	-0.0379***	-0.0237***
SME * dummy 08-09	0.00373	-0.00138	-0.0191***	0.00256	0.000536	-0.0180***
SME * dummy 10-11	0.00475	-0.000891	-0.0270***	0.00343	0.00630	-0.0231***
Observations	1,031,664	42,200	35,018	1,215,143	60,786	40,626
R-squared	0.080	0.075	0.058	0.078	0.075	0.058
Panel C: LTD/TD						
Dummy 2008-09=1	-0.0154***	-0.0187*	-0.0256	-0.0112***	-0.0285***	-0.0375**
Dummy 2010-11=1	-0.0262***	-0.0762***	-0.0739***	-0.0215***	-0.0760***	-0.0990***
SME * dummy 08-09	0.00439	-0.00883	-0.0390***	-0.00120	0.00117	-0.0320***
SME * dummy 10-11	0.00498	0.0163	-0.0612***	-0.000994	0.0211	-0.0413***
Observations	989,391	41,696	34,394	1,163,991	60,071	39,927
R-squared	0.050	0.061	0.053	0.048	0.062	0.051

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. Control variables include FATA, ROA, sales to total assets, total assets, and the log of real GDP per capita. A firm is included in the sample if it is privately held, and if it has at least 6 years of consecutive data. Columns are organized as follows: high income countries (column 2 and 4), upper middle income countries (columns 2 and 5), lower middle and low income countries (columns 3 and 6). In columns (1)-(3), a firm is classified as an SME if it had on average less than 250 employees during the period of observation. In columns (4)-(6) the SME threshold is 100 employees. In the last three columns, the criteria that in order for a firm to enter the sample it has to be present in 2011 is not applied. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 6. Robustness impact of the crisis on firms' capital structures for privately held and publicly listed firms

(large firms only)

	Controlling for crisis effect by average total assets			Criteria firm present in 2011 dropped		
	HI	UMI	LMILI	HI	UMI	LMILI
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: TD/TA						
Dummy 2008-09=1	-0.00597*	-0.000799	-0.00195	-0.00426	-0.000301	0.00114
Dummy 2010-11=1	-0.0168***	-0.00474	-0.0206*	-0.0158***	-0.00581	-0.0185
Non-listed firm * dummy 08-09	-0.0200***	-0.0229***	-0.000964	-0.0227***	-0.0200**	-0.00177
Non-listed firm * dummy 10-11	-0.0195***	-0.0413***	-0.0136	-0.0210***	-0.0384***	-0.0109
Observations	152,229	16,983	23,117	177,154	20,045	25,803
R-squared	0.055	0.059	0.091	0.053	0.060	0.085
Panel B: LTD/TA						
Dummy 2008-09=1	0.00287	-0.00522	-0.00853	0.00319	-0.00511	-0.00829
Dummy 2010-11=1	-0.00475**	-0.00425	-0.0544**	-0.00536**	-0.00595	-0.0568**
Non-listed firm * dummy 08-09	-0.0105***	-0.00566	0.00358	-0.0110***	-0.00323	0.00481
Non-listed firm * dummy 10-11	-0.00863***	-0.0258***	0.0304	-0.00809***	-0.0214***	0.0346
Observations	152,229	16,983	23,117	177,154	20,045	25,803
R-squared	0.064	0.069	0.052	0.064	0.066	0.053
Panel C: LTD/TD						
Dummy 2008-09=1	-0.00597*	-0.000799	-0.00195	0.00607*	-0.0163*	-0.0502**
Dummy 2010-11=1	-0.0168***	-0.00474	-0.0206*	-0.00447	-0.00846	-0.169***
Non-listed firm * dummy 08-09	-0.0200***	-0.0229***	-0.000964	-0.0171***	0.00284	0.0132
Non-listed firm * dummy 10-11	-0.0195***	-0.0413***	-0.0136	-0.0166***	-0.0477***	0.0726
Observations	152,229	16,983	23,117	175,263	19,936	25,611
R-squared	0.055	0.059	0.091	0.043	0.052	0.046

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. Control variables include FATA, ROA, sales to assets, total assets, and the log of real GDP per capita. A firm is included in the sample if it is privately held, and if it has at least 6 years of consecutive data. Columns are organized as follows: high income countries (columns 1 and 4), upper middle income countries (columns 2 and 5), lower middle and low income countries (columns 3 and 6). A country is a crisis country if it has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). The estimation in columns (1)-(3) include the interaction of the crisis dummies with the firm assets. In columns (3)-(6). In the last three columns, the criteria that in order for a firm to enter the sample it has to be present in 2011 is not applied. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 7. Estimates of tables 3 and 4 controlling for debt overhang

Sample:	X= SME (listed firms dropped)			X= non-listed (SME dropped)		
	(1)	(2)	(3)	(4)	(5)	(6)
	HI	UMI	LMILI	HI	UMI	LMILI
Panel A: TD/TA						
Dummy 2008-09=1	-0.0235***	-0.0114	0.00676	-0.00221	0.00533	0.00892
Dummy 2010-11=1	-0.0309***	-0.0248**	-0.00997	-0.00963**	0.0122	0.00766
X * dummy 08-09	0.00500	-0.00556	-0.0302***	-0.0187***	-0.0217***	-0.00466
X * dummy 10-11	0.0105	-0.0152*	-0.0380***	-0.0157***	-0.0364***	-0.0217**
UTDTA*dummy 08-09	-0.00840	-0.0268*	-0.0210	-0.0106*	-0.0159*	-0.0163
UTDTA*dummy 10-11	-0.0164	-0.0468***	-0.0542*	-0.0230***	-0.0474***	-0.0459**
Observations	1,031,664	42,200	35,018	152,229	16,983	23,117
R-squared	0.037	0.071	0.099	0.057	0.064	0.096
Panel B: LTD/TA						
Dummy 2008-09=1	-0.0102***	-0.0132**	-0.00632	0.00359	-0.00229	-0.00858
Dummy 2010-11=1	-0.0141***	-0.0297***	-0.0183**	-0.00288	0.00257	-0.0427*
X * dummy 08-09	0.00167	-0.000878	-0.0183***	-0.0112***	-0.00531	0.00295
X * dummy 10-11	0.00323	0.00185	-0.0224***	-0.00774***	-0.0240***	0.0278
UTDTA*dummy 08-09	0.00387	-0.00434	0.00276	-6.54e-05	-0.00698	0.00157
UTDTA*dummy 10-11	-0.000343	-0.0127	-0.0158	-0.00583**	-0.0186***	-0.0209
Observations	1,031,664	42,200	35,018	152,229	16,983	23,117
R-squared	0.080	0.075	0.060	0.065	0.071	0.055
Panel C: LTD/TD						
Dummy 2008-09=1	-0.0250***	-0.0324***	-0.0746***	0.00523	-0.0161*	-0.0844***
Dummy 2010-11=1	-0.0384***	-0.0859***	-0.141***	-0.00573	-0.0104	-0.202***
X * dummy 08-09	-0.00224	-0.00653	-0.0366***	-0.0231***	0.000524	0.0185
X * dummy 10-11	-0.00252	0.00738	-0.0466***	-0.0251***	-0.0573***	0.0762
UTDTA*dummy 08-09	0.0296***	0.0203**	0.0761***	0.0148***	0.00206	0.0589***
UTDTA*dummy 10-11	0.0358***	0.0361***	0.0861***	0.0206***	0.0183*	0.0592***
Observations	989,391	41,696	34,394	150,686	16,900	22,949
R-squared	0.052	0.062	0.058	0.044	0.054	0.050

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. A firm is included in the sample if it is privately held, if it had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data, including 2011. The dummy variable "UTDTA" takes the value 1 if a firm's TDTA in 2007 is above the median across all firms. Control variables include the ratio of fixed assets to total assets, the return on assets, the turnover ratio (sales over assets), total assets (in mil. USD) and the log of real GDP per capita. Columns are organized as follows: high income countries (columns 1 and 4), upper middle income countries (columns 2 and 5), lower middle and low income countries (columns 3 and 6). In the estimations in columns (1)-(3) listed firms are dropped while in columns (4)-(5) SME firms are dropped. SMEs are firms with less than 100 employees. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 8. Estimates of tables 3 and 4 controlling for initial productivity

Sample:	X= SME (listed firms dropped)			X= non-listed (SME dropped)		
	(1) HI	(2) UMI	(3) LMILI	(4) HI	(5) UMI	(6) LMILI
Panel A: TD/TA						
Dummy 2008-09=1	-0.0221***	-0.0201**	-0.00241	0.00234	0.00237	0.00206
Dummy 2010-11=1	-0.0331***	-0.0439***	-0.0340***	-0.00456	-0.000504	-0.0126
X * dummy 08-09	0.00467	-0.00560	-0.0307***	-0.0229***	-0.0231***	-0.00552
X * dummy 10-11	0.00860	-0.0158*	-0.0390***	-0.0243***	-0.0431***	-0.0230*
UYL*dummy 08-09	-0.0116**	-0.00901	-0.0142**	-0.0119***	-0.00704	-0.0143**
UYL*dummy 10-11	-0.0126**	-0.00736	-0.0175***	-0.0170***	-0.00740	-0.0253***
Observations	920,513	40,483	34,917	144,823	14,822	21,667
R-squared	0.040	0.068	0.094	0.057	0.062	0.098
Panel B: LTD/TA						
Dummy 2008-09=1	-0.00712***	-0.0140***	-0.00496	0.00508**	-0.00121	-0.00848*
Dummy 2010-11=1	-0.0137***	-0.0350***	-0.0252***	-0.00141	-0.00200	-0.0227**
X * dummy 08-09	0.00241	0.000165	-0.0184***	-0.0114***	-0.00682	0.00261
X * dummy 10-11	0.00342	0.00223	-0.0227***	-0.00966***	-0.0261***	-0.00333
UYL*dummy 08-09	-0.00233	-0.00413	-0.00308	-0.00242	-0.00866	-0.00290
UYL*dummy 10-11	-0.000465	-0.00159	-0.00468	-0.00454**	-0.00640	-0.0131***
Observations	920,513	40,483	34,917	144,823	14,822	21,667
R-squared	0.079	0.076	0.058	0.063	0.072	0.052
Panel C: LTD/TD						
Dummy 2008-09=1	-0.0113***	-0.0201**	-0.0410*	0.00793*	-0.00532	-0.0571***
Dummy 2010-11=1	-0.0231***	-0.0696***	-0.103***	-0.00181	0.00184	-0.0884***
X * dummy 08-09	-0.00103	-0.00279	-0.0344***	-0.0192***	-0.00445	0.0145
X * dummy 10-11	-0.000275	0.0105	-0.0437***	-0.0185***	-0.0600***	-0.0157
UYL*dummy 08-09	0.00273	-0.00862	0.0152	0.00320	-0.0145	0.00864
UYL*dummy 10-11	0.00762	0.000718	0.0324**	0.00274	-0.00556	0.00578
Observations	889,076	40,118	34,294	143,522	14,768	21,506
R-squared	0.048	0.062	0.053	0.043	0.055	0.047

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with a first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and it includes firm fixed effects. A firm is included in the sample if it is privately held, if it had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data, including 2011. The dummy variable "UYL" takes the value 1 if a firm's labor productivity in 2007 is above the median across all firms. Control variables include the ratio of fixed assets to total assets, the return on assets, the turnover ratio (sales over assets), total assets (in mil. USD) and the log of real GDP per capita. Columns are organized as follows: high income countries (columns 1 and 4), upper middle income countries (column 2 and 5), and lower middle and low income countries (column 3 and 6). A firm is classified as an SME if it had on average less than 100 employees during the period of observation. In the estimations in columns (1)-(3) listed firms are dropped while in the estimations in columns (4)-(6) SMEs are dropped. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 9A. Impact on SMEs of country characteristics during the crisis - TD/TA

(Privately held firms with strictly positive LTD before 2008)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dummy 2008-09=1	-0.0286***	0.0470	-0.00656	-0.0171**	-0.0103	-0.00614	-0.00922	-0.0307	-0.0241***	-0.00179	0.0581
Dummy 2010-11=1	-0.0475***	-0.00622	-0.0209	-0.0324**	-0.0208*	-0.0202	-0.0259***	-0.0639	-0.0377***	-0.0203**	0.0281
SME * dummy 08-09	0.00257	-0.159**	-0.0389	-0.00328	-0.0174	-0.0226	-0.0335**	0.0407	0.0168	-0.0516***	-0.123
SME * dummy 10-11	0.00472	-0.227***	-0.0355	0.00263	-0.000454	-0.0160	-0.0432***	0.00657	0.0273**	-0.0575***	-0.130*
Country characteristic (X)	Systemic crisis	Log GDP per capita	Private credit / GDP	Bond mkt cap / GDP	Stock mkt cap / GDP	Investor protection 1	Investor protection 2	Bank contestability	Insolvency 1	Credit information	Country risk
Common effect											
2008-09*X	0.00888	-0.00730	-0.000152	-0.000150	-0.000235	-0.00393	-0.00270	0.000913	-4.12e-05	-0.00478	-0.000922
2010-11*X	0.0183**	-0.00329	-0.000147	-0.000101	-0.000288**	-0.00381	-0.00215	0.00342	-0.000252	-0.00374**	-0.000579
Interaction with SME dummy											
2008-09*SME*X	-0.00374	0.0161**	0.000334**	0.000156*	0.000308	0.00509	0.00586	-0.00516	-0.00818***	0.0109***	0.00159*
2010-11*SME*X	0.00290	0.0232***	0.000356*	0.000157	0.000132	0.00493	0.00835**	7.66e-05	-0.0105***	0.0132***	0.00172**
F test (common+SME effects)											
2008-09	0.846	0.2185	0.4046	0.9516	0.8996	0.866	0.3722	0.8439	0.0281	0.0826	0.5029
2010-11	0.4863	0.0113	0.4114	0.6677	0.8148	0.8936	0.1611	0.8881	0.0011	0.0002	0.3112
Observations	1,108,882	1,108,796	1,079,995	957,403	1,108,642	1,108,642	1,108,642	1,093,221	1,108,642	1,108,642	1,100,014
R-squared	0.038	0.039	0.036	0.032	0.039	0.038	0.039	0.037	0.039	0.038	0.038

Note: The dependent variable is the ratio of total financial debt plus trade credit liabilities to total assets. The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. A firm is included if it was privately held, had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data ending in 2011. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. All country variables are as of 2008, except country risk which for the second period is the average 2010-11, and the systemic crisis dummy equal to one if the country has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). A firm is an SME if it had less than 100 employees on average during the period. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table 9B. Impact on SMEs of country characteristics during the crisis – LTD/TA
(Privately held firms with strictly positive LTD before 2008)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dummy 2008-09=1	-0.0102***	0.0256	-0.00673	-0.00818**	-0.00412	-0.00871	-0.00342	-0.0348	-0.00787***	0.00268	0.0569*
Dummy 2010-11=1	-0.0193***	-0.00538	-0.0154**	-0.0136***	-0.0112**	-0.0211**	-0.0107	-0.0470**	-0.0163***	-0.00784	0.0487
SME * dummy 08-09	0.00384*	-0.0581**	-0.0135	0.000675	-0.00994	-0.00838	-0.00338	0.0863**	0.00954**	-0.0206***	-0.0548*
SME * dummy 10-11	0.00503	-0.0966***	-0.0146	0.00536	-0.00785	-0.0101	-0.00911	0.108***	0.0162***	-0.0284***	-0.0674**
Country characteristic (X)	Systemic crisis	Log GDP per capita	Private credit / GDP	Bond mkt cap / GDP	Stock mkt cap / GDP	Investor protection 1	Investor protection 2	Bank contestability	Insolvency 1	Credit information	Country risk
Common effect											
2008-09*X	0.00608	-0.00337	-3.89e-06	1.28e-06	-5.19e-05	0.000311	-0.00131	0.00367	0.000246	-0.00213	-0.000691*
2010-11*X	0.00862**	-0.00101	2.40e-06	-1.79e-06	-6.18e-05	0.00130	-0.00131	0.00427	0.000467	-0.00152	-0.000542
Interaction with SME dummy											
2008-09*SME*X	-0.00623	0.00594**	0.000117**	1.92e-05	0.000176	0.00197	0.00147	-0.0112**	-0.00444***	0.00445***	0.000709*
2010-11*SME*X	-0.00448	0.00987***	0.000146**	-1.35e-05	0.000177	0.00278	0.00249**	-0.0138**	-0.00669***	0.00643***	0.000878**
Note: F test (common+SME effects)											
2008-09	0.9819	0.3004	0.0432	0.5939	0.3671	0.1901	0.884	0.1727	0.0016	0.0924	0.9565
2010-11	0.6025	0.0012	0.0205	0.7519	0.4795	0.0555	0.3284	0.133	0	0.0001	0.5081
Observations	1,108,882	1,108,796	1,079,995	957,403	1,100,049	1,108,642	1,108,642	1,093,221	1,108,642	1,108,642	1,100,097
R-squared	0.077	0.077	0.074	0.073	0.077	0.077	0.077	0.075	0.077	0.077	0.079

Note: The dependent variable is the ratio of long-term financial debt at remaining maturity to total assets. The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. A firm is included if it was privately held, had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data ending in 2011. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. All country variables are as of 2008, except country risk which for the second period is the average 2010-11, and the systemic crisis dummy equal to one if the country has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). A firm is an SME if it had less than 100 employees on average during the period. Significance levels: ***: p<0.01, **: p<0.05, *: p<0.1. (Standard errors are in parenthesis).

Table 9C. Impact on SMEs of country characteristics during the crisis – LTD/TD

(Privately held firms with strictly positive LTD before 2008)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dummy 2008-09=1	-0.0123***	-0.0327	-0.0260*	-0.0129	-0.0167	-0.0288*	-0.0184	-0.0353	-0.00765	-0.0191	0.0263
Dummy 2010-11=1	-0.0251***	-0.167*	-0.0553***	-0.0174*	-0.0399***	-0.0731***	-0.0431*	0.00134	-0.0232**	-0.0619**	-0.0538
SME * dummy 08-09	0.00793*	-0.0406	0.0242	0.0303**	0.00401	0.0232	-0.00502	0.211***	0.0102	-0.0128	-0.0834
SME * dummy 10-11	0.0101**	-0.0302	0.0275	0.0408***	0.00572	0.0346*	-0.00193	0.271***	0.0228***	-0.0211	-0.0601
Country characteristic (X)	Systemic crisis	Log GDP per capita	Private credit / GDP	Bond mkt cap / GDP	Stock mkt cap / GDP	Investor protection 1	Investor protection 2	Bank contestability	Insolvency 1	Credit information	Country risk
Common effect											
2008-09*X	0.000270	0.00202	0.000122	4.26e-05	7.20e-05	0.00357	0.00107	0.00303	-0.00239	0.00143	-0.000356
2010-11*X	-0.00746	0.0140	0.000230*	-1.83e-05	0.000178	0.00955**	0.00246	-0.00400	-0.00331	0.00694	0.000730
Interaction with SME dummy											
2008-09*SME*X	-0.0146	0.00403	-0.000195	-0.000448**	-5.79e-05	-0.00492	0.000812	-0.0275***	-0.00507	0.00264	0.00109
2010-11*SME*X	-0.00951	0.00306	-0.000187	-0.000551***	-1.43e-05	-0.00653	0.000931	-0.0346***	-0.00915***	0.00495	0.000797
Note: F test (common+SME effects)											
2008-09	0.114	0.2434	0.5926	0.0517	0.9388	0.66	0.4089	0.0058	0.0065	0.2407	0.4002
2010-11	0.1985	0.0185	0.7981	0.022	0.5531	0.4873	0.206	0	0.0005	0.0025	0.254
Observations	1,065,481	1,065,395	1,036,661	915,022	1,056,653	1,065,241	1,065,241	1,049,921	1,065,241	1,065,241	1,056,701
R-squared	0.049	0.049	0.047	0.047	0.049	0.049	0.049	0.049	0.049	0.049	0.050

Note: The dependent variable is the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities. The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. A firm is included if it was privately held, had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data ending in 2011. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. All country variables are as of 2008, except country risk which for the second period is the average 2010-11, and the systemic crisis dummy equal to one if the country has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). A firm is an SME if it had less than 100 employees on average during the period. Significance levels: ***: p<0.01, **: p<0.05, *: p<0.1. (Standard errors are in parenthesis).

Table 10. Joint impact of country characteristics for the sample of privately held firms

	Panel A: LTD/TD			Panel B: TD/TA			Panel C: LTD/TD		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dummy 2008-09=1	0.0406	0.0476	0.0712	-0.0107	0.0420	0.00626	-0.0788	0.0665	-0.0446
Dummy 2010-11=1	-0.0220	-0.113*	-0.0738	-0.0340	-0.0108	-0.0639	-0.112	0.00425	-0.195
SME * dummy 08-09	-0.127	-0.101	-0.141	0.0403	0.0474	0.0522	0.251***	0.141	0.234**
SME * dummy 10-11	-0.202	-0.0938	-0.239	0.0402	0.0857*	0.0505	0.305***	0.253**	0.353***
Main effect									
2008-09*Credit information	-0.00552*	-0.00541*	-0.00429	-0.00204	-0.000716	-0.00137	0.00172	0.00546	0.00306
2010-11*Credit information	-	-0.00617***	-0.00590**	-0.00117	-0.000549	-0.00234	0.00741	0.0105*	0.00412
2008-09*resolving insolvency 1	-0.00152	-0.00167	-0.00228	-	-0.00118	-0.00125	-0.00303	-0.00381	-0.00378
2010-11*resolving insolvency 1	-0.00236	-0.00191	-0.00151	-	-0.000723	-6.20e-05	-0.00123	-0.00180	0.000356
2008-09*bank contestability	-0.00474	-0.00508	-0.00489	0.00198	0.000134	0.00187	0.00857	0.00362	0.00832
2010-11*bank contestability	0.000829	0.00402	0.00134	0.00340	0.00262	0.00365	0.00670	0.00280	0.00735
2008-09*country risk		-6.39e-05			-0.000582**			-	
2010-11*country risk		0.00100*			-0.000261			-0.00130*	
2008-09*log GDP per capita			-0.00344			-0.00190			-0.00378
2010-11*log GDP per capita			0.00562			0.00329			0.00923
Interaction with SME dummy									
2008-09*Credit information	0.0106**	0.0109**	0.00974***	0.00269	0.00196	0.00256	-0.00287	-0.00630	-0.00389
2010-11*Credit information	0.0135**	0.0161***	0.0139***	0.00417*	0.00427**	0.00498**	-0.00246	-0.00494	0.000186
2008-09*resolving insolvency 1	-	-0.00690*	-0.00629***	-	-0.00289**	-	-	-0.000232	-0.000202
2010-11*resolving insolvency 1	-	-0.0102**	-0.00766***	-	-0.00485***	-	-0.00355	-0.00427	-0.00404
2008-09*bank contestability	0.0117	0.0116	0.0120	-0.00631	-0.00539	-0.00591	-	-0.0266**	-0.0305***
2010-11*bank contestability	0.0211	0.0180	0.0198	-0.00657	-0.00682	-0.00702	-	-	-0.0380***
2008-09*country risk		-0.000318			-0.000107			0.00121	
2010-11*country risk		-0.00124			-0.000533			0.000571	
2008-09*log GDP per capita			0.00161			-0.00127			0.00186
2010-11*log GDP per capita			0.00406			-0.00115			-0.00534
Observations	1,092,981	1,084,196	1,092,895	1,092,98	1,084,196	1,092,895	1,049,68	1,040,901	1,049,595
R-squared	0.038	0.039	0.039	0.076	0.076	0.076	0.049	0.049	0.049

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. A firm is included if it was privately held, had strictly positive long-term financial debt on average in the years before 2008, and if it has at least 6 years of consecutive data ending in 2011. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. All country variables are as of 2008, except country risk which for the second period is the average 2010-11, and the systemic crisis dummy equal to one if the country has experienced a systemic banking crisis since 2008, according to the classification of Laeven and Valencia (2012). A firm is an SME if it had less than 100 employees on average during the period. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Appendix Table A1: Number of firms
Panel A: All firms

Country	# Observations	# Firms	# Listed firms	# SMEs	# Large firms	# Emp data
Argentina	494	68	8	19	27	46
Australia	574	77	74	9	56	65
Bangladesh	81	11	11	-	11	11
Belgium	65,261	8,818	28	3,971	1,016	4,987
Bolivia	23	3	1	1	2	3
Bosnia and Herzegovina	12,839	1,700	121	1,533	166	1,699
Brazil	568	76	58	1	40	41
Bulgaria	34,053	4,905	47	3,938	967	4,905
Canada	436	57	53	-	7	7
Cayman Islands	703	97	97	-	94	94
Chile	231	30	25	-	19	19
China	3,632	520	348	11	508	519
Costa Rica	16	2	2	-	-	-
Croatia	55,824	7,234	66	5,217	648	5,865
Cyprus	85	13	12	1	9	10
Czech Republic	68,389	9,224	4	6,779	1,449	8,228
Denmark	142	19	17	2	17	19
Ecuador	162	23	6	-	-	-
Egypt, Arab Rep.	320	41	41	-	20	20
Estonia	18,433	2,387	4	1,920	242	2,162
Finland	18,631	2,501	22	1,827	124	1,951
Germany	21,529	3,040	136	973	1,664	2,637
Greece	31,209	4,030	53	3,523	372	3,895
Hong Kong SAR, China	149	21	20	-	18	18
Hungary	34,248	4,491	7	3,648	769	4,417
Iceland	513	71	-	6	1	7
India	4,353	593	592	4	108	112
Indonesia	355	47	47	1	46	47
Ireland	80	11	11	1	10	11
Islamic Republic of Iran	290	38	37	1	37	38
Israel	524	76	66	7	64	71
Italy	549,656	72,420	71	50,965	3,594	54,559
Japan	327,142	42,732	590	35,323	7,372	42,695
Jordan	117	16	16	4	12	16
Kazakhstan	98	15	3	1	13	14
Kenya	72	10	10	-	3	3
Korea, Rep.	78,633	10,428	20	8,998	1,350	10,348
Kuwait	123	17	17	3	12	15
Latvia	4,497	598	7	422	176	598
Lithuania	3,108	414	3	218	196	414

Appendix Table A1 (continued)
Panel A: All firms - continued

Country	# Observations	# Firms	# Listed firms	# SMEs	# Large firms	# Emp data
Luxembourg	905	124	4	33	55	88
Malta	3,561	479	1	44	9	53
Mauritius	29	4	4	-	2	2
Mexico	189	25	17	3	16	19
Montenegro	92	13	8	6	7	13
Morocco	36	5	5	-	1	1
Namibia	444	60	58	-	52	52
New Zealand	357	49	23	3	14	17
Nigeria	92	12	12	-	12	12
Norway	59,935	8,045	11	7,498	547	8,045
Oman	162	22	22	2	20	22
Pakistan	484	66	66	1	24	25
Panama	54	7	2	2	5	7
Paraguay	43	6	2	2	4	6
Peru	211	29	22	6	11	17
Philippines	188	25	25	3	22	25
Poland	34,326	4,784	42	2,926	1,845	4,771
Portugal	131,994	17,824	15	15,757	942	16,699
Republic of Moldova	910	120	87	34	12	46
Russian Federation	622	88	80	1	78	79
Saudi Arabia	194	26	26	-	25	25
Serbia	9,165	1,191	181	942	249	1,191
Seychelles	247	32	28	1	31	32
Singapore	998	135	83	15	81	96
Slovak Republic	6,625	911	9	697	185	882
Slovenia	7,620	1,269	9	1,087	152	1,239
Spain	128,544	16,709	26	13,395	2,027	15,422
Sri Lanka	273	39	39	-	28	28
Sweden	111,412	14,408	61	13,443	854	14,297
Switzerland	2,208	287	43	84	177	261
Thailand	46,164	6,067	121	408	606	1,014
Turkey	135	19	19	-	17	17
Ukraine	205,262	26,597	344	20,773	5,821	26,594
United Arab Emirates	40	5	5	-	5	5
United Kingdom	1,318	173	159	10	161	171
United States	4,034	531	501	22	504	526
Venezuela, RB	14	2	1	-	1	1
Vietnam	870	133	123	5	97	102
Virgin Islands (British)	22	3	3	-	3	3

Appendix Table A1 (continued)
Panel B: Firms with LTD>0 pre crisis

Country	# Observations	# Firms	# Listed firms	# SMEs	# Large firms	# Emp data
Argentina	359	49	5	14	22	36
Australia	531	71	70	8	51	59
Bangladesh	81	11	11	-	11	11
Belgium	41,886	5,644	28	2,634	682	3,316
Bolivia	23	3	1	1	2	3
Bosnia and Herzegovina	9,604	1,266	100	1,124	142	1,266
Brazil	516	69	52	1	39	40
Bulgaria	17,522	2,524	29	1,989	535	2,524
Canada	408	53	50	-	6	6
Cayman Islands	602	82	82	-	80	80
Chile	223	29	25	-	19	19
China	2,972	413	330	3	409	412
Costa Rica	16	2	2	-	-	-
Croatia	37,544	4,830	61	3,968	578	4,546
Cyprus	85	13	12	1	9	10
Czech Republic	35,204	4,682	4	3,277	1,195	4,472
Denmark	127	17	15	-	17	17
Ecuador	162	23	6	-	-	-
Egypt, Arab Rep.	280	36	36	-	18	18
Estonia	16,466	2,118	4	1,783	224	2,007
Finland	15,725	2,101	20	1,596	67	1,663
Germany	19,466	2,739	128	864	1,544	2,408
Greece	16,608	2,132	48	1,833	264	2,097
Hong Kong SAR, China	131	18	17	-	18	18
Hungary	13,938	1,808	6	1,279	515	1,794
Iceland	436	60	-	6	1	7
India	4,322	589	588	4	108	112
Indonesia	340	45	45	1	44	45
Ireland	80	11	11	1	10	11
Islamic Republic of Iran	180	23	23	-	23	23
Israel	481	70	60	7	58	65
Italy	287,910	37,531	71	29,493	2,438	31,931
Japan	267,497	34,897	474	29,134	5,745	34,879
Jordan	89	12	12	3	9	12
Kazakhstan	49	7	3	-	6	6
Kenya	44	6	6	-	1	1
Korea, Rep.	66,618	8,809	18	7,697	1,043	8,740
Kuwait	110	15	15	2	12	14
Latvia	3,455	457	6	324	133	457
Lithuania	3,066	408	3	217	191	408

Appendix Table A1 (continued)
Panel B: Firms with LTD>0 pre crisis

Country	# Observations	# Firms	# Listed firms	# SMEs	# Large firms	# Emp data
Luxembourg	346	47	4	11	27	38
Malta	2,452	328	1	29	4	33
Mauritius	21	3	3	-	2	2
Mexico	155	20	15	1	13	14
Montenegro	58	8	4	3	5	8
Morocco	30	4	4	-	1	1
Namibia	436	59	57	-	51	51
New Zealand	312	42	23	3	14	17
Nigeria	69	9	9	-	9	9
Norway	28,966	3,864	9	3,658	206	3,864
Oman	148	20	20	2	18	20
Pakistan	458	62	62	1	22	23
Panama	46	6	1	2	4	6
Paraguay	43	6	2	2	4	6
Peru	191	26	20	5	10	15
Philippines	165	22	22	1	21	22
Poland	24,616	3,432	33	2,158	1,264	3,422
Portugal	86,383	11,554	14	10,420	758	11,178
Republic of Moldova	312	42	32	8	5	13
Russian Federation	438	60	54	-	52	52
Saudi Arabia	170	23	23	-	22	22
Serbia	5,673	733	119	553	180	733
Seychelles	233	30	26	1	29	30
Singapore	651	87	73	7	62	69
Slovak Republic	3,270	441	4	333	106	439
Slovenia	6,174	1,028	8	902	102	1,004
Spain	76,918	9,902	26	7,969	1,662	9,631
Sri Lanka	243	35	35	-	25	25
Sweden	67,547	8,707	53	8,286	378	8,664
Switzerland	1,882	244	42	62	159	221
Thailand	30,704	4,011	111	281	430	711
Turkey	102	14	14	-	12	12
Ukraine	36,428	4,663	180	2,049	2,614	4,663
United Arab Emirates	32	4	4	-	4	4
United Kingdom	1,254	164	151	8	154	162
United States	3,837	504	474	17	483	500
Venezuela, RB	14	2	1	-	1	1
Vietnam	734	112	105	4	82	86
Virgin Islands (British)	15	2	2	-	2	2

Appendix Table A2. Definition of variables and sources

Variable	Definition	Source
Firm characteristics		
TDTA	Ratio of total financial debt include trade credit to total assets	ORBIS, Bureau Van Dijk
LTDTA	Ratio of long-term financial debt (on a remaining maturity basis) to total assets	ORBIS, Bureau Van Dijk
LTDTD	Ratio of long-term financial debt (on a remaining maturity basis) to total financial debt	ORBIS, Bureau Van Dijk
ROA	Ratio of pre-tax profits to total assets	ORBIS, Bureau Van Dijk
FATA	Ratio of tangible and intangible fixed assets to total assets	ORBIS, Bureau Van Dijk
Sales / TA	Ratio of net sales to total assets	ORBIS, Bureau Van Dijk
Cash / TA	Ratio of cash and cash equivalents to total assets	ORBIS, Bureau Van Dijk
SME	Dummy variable =1 if average employment is between 10 and 99	ORBIS, Bureau Van Dijk
Listed	Dummy variable =1 if the firm is publicly listed on a stock exchange	ORBIS, Bureau Van Dijk
Total assets	Total assets of the firm (in millions USD)	ORBIS, Bureau Van Dijk
Country characteristics		
Global financial crisis years (08-09)	Dummy variable =1 if year = 2008 or 2009	
Post global financial crisis years (10-11)	Dummy variable =1 if year = 2010 or 2011	
Crisis country	Dummy variable =1 if the country has experienced a systemic banking crisis since 2008	Laeven and Valencia (2010)
High Income	Dummy =1 if the country was High income in 2012	World Development Indicators
Upper Middle Income	Dummy =1 if the country was Upper Middle Income in 2012	World Development Indicators
Lower Middle and Low Income	Dummy =1 if the country was Lower Middle and Low Income in 2012	World Development Indicators
GDP per capita	Log of real GDP per capita, in constant 2005 USD	World Development Indicators

Appendix Table A2. Definition of variables and sources (continued)

Variable	Definition	Source
Country characteristics		
Investor protection 1	Index of antidirector rights, scale 0-10. It measures minority shareholders' ability to sue and hold interested directors liable for prejudicial related party transactions, and available legal remedies.	Doing Business, World Bank
Investor protection 2	Index of disclosure, scale 0-10. The index measures review and approval requirements for related party transactions and internal, immediate and periodic disclosure requirements.	Doing Business, World Bank
Private credit to GDP	Ratio of private credit by deposit money banks to GDP.	Global Financial Development Database 2013
Stock market capitalization to GDP	Ratio of stock market capitalization to GDP	Global Financial Development Database 2013
Private bond market capitalization to GDP	Amount outstanding of private domestic and international debt securities, as a share of GDP.	Global Financial Development Database 2013
Bank contestability	Index of restrictions on bank entry, scale 0-8, defined as the sum of dummy variables capturing the extent to which legal submissions are required to obtain a bank license.	Barth, Caprio and Levine (2013)
Resolving insolvency 1	The average duration (in calendar years) of bankruptcy proceedings, including includes all appeals and delays. Weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the insolvency process that increase costs and impede contract enforcement.	Doing Business, World Bank
Resolving insolvency 2	Recovery rate (cents on the dollar) secured creditors recover from an insolvent firm at the end of insolvency proceedings. Weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the insolvency process that increase costs and impede contract enforcement.	Doing Business, World Bank
Credit information	This index measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau. Scale 0-8.	Doing Business, World Bank
Country risk	Composite political risks (50%), financial risks (25%) and economic risk (25%) indicators. Scale 0-100.	International Country Risk Guide

Table A3. Robustness of Table 9

			LTD/TD			
			no restrict LTD>0	non-survivor	250 empl threshold	Control interact. GDP per cap
Systemic crisis	Main	2008-09	0.00717	0.00312	-0.00475	0.00133
		2010-11	0.00699	-0.00512	-0.0140	-0.00304
	Interaction SME	2008-09	-0.0126	-0.0187	-0.00854	-0.0153
		2010-11	-0.00546	-0.0130	-0.00169	-0.0138
GDP per capita	Main	2008-09	-0.00622	0.00114	-0.00436	.
		2010-11	-0.00133	0.0127	0.00480	.
	Interaction SME	2008-09	0.00393	0.00318	0.0103**	.
		2010-11	0.000807	0.00166	0.0127*	.
Private credit / GDP	Main	2008-09	-2.81e-05	0.000141	4.67e-05	0.000186*
		2010-11	1.62e-05	0.000238**	0.000113	0.000112
	Interaction SME	2008-09	-8.51e-05	-0.000245	-8.70e-05	-0.000363**
		2010-11	1.76e-06	-0.000243	-3.37e-05	-0.000272
Bond market cap / GDP	Main	2008-09	3.14e-05	7.70e-05	3.51e-05	0.000111
		2010-11	-1.64e-05	4.84e-06	4.72e-05	-3.60e-05
	Interaction SME	2008-09	-0.000291*	-0.000511**	-0.000379**	-0.000532***
		2010-11	-0.000218	-0.000599***	-0.000546**	-0.000568***
Stock cap / GDP	Main	2008-09	-0.000112	0.000119	3.89e-05	7.14e-05
		2010-11	-8.60e-05	0.000230	9.72e-05	-4.45e-05
	Interaction SME	2008-09	-8.18e-05	-0.000125	-1.52e-05	-0.000128
		2010-11	-0.000152	-6.90e-05	7.58e-05	7.10e-06
Investor protection 1	Main	2008-09	-0.00188	0.00409	0.000459	0.00523*
		2010-11	0.00162	0.00984***	0.00675	0.00703*
	Interaction SME	2008-09	-0.00165	-0.00619	-0.000967	-0.00807**
		2010-11	-0.00191	-0.00774*	-0.00266	-0.00701*
Investor protection 2	Main	2008-09	-0.000417	0.000534	-0.000230	0.000981
		2010-11	-0.000313	0.00196	-0.00137	-0.000265
	Interaction SME	2008-09	0.00112	0.00167	0.00208	0.000417
		2010-11	0.00128	0.00145	0.00500*	0.00153
Bank contestability	Main	2008-09	0.0111**	0.00477	0.00839	0.00452
		2010-11	0.00888	-0.00183	0.00426	0.00655
	Interaction SME	2008-09	-0.0219**	-0.0297***	-0.0296***	-0.0289***
		2010-11	-0.0226***	-0.0363***	-0.0387***	-0.0422***
Resolving insolvency 1	Main	2008-09	0.000874	-0.00211	-0.000340	-0.00238
		2010-11	0.000444	-0.00271	0.000349	0.00188
	Interaction SME	2008-09	-0.00234	-0.00532*	-0.00640	-0.00576
		2010-11	-0.00394	-0.00915***	-0.0116***	-0.0119***
Credit information	Main	2008-09	-0.00232	0.000641	-0.00199	0.00189
		2010-11	-0.000998	0.00613	0.000859	0.00342
	Interaction SME	2008-09	0.00262	0.00288	0.00586*	0.00141
		2010-11	0.00293	0.00483	0.0107***	0.00594
Country risk	Main	2008-09	-0.00119*	-0.000573	-0.00115	-0.00353***
		2010-11	-0.000801	0.000546	-0.000527	-0.00621***
	Interaction SME	2008-09	0.000787	0.000958	0.00168**	0.00343*
		2010-11	0.000305	0.000325	0.00184*	0.00298

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. A firm is included if it was privately held, and if it has at least 6 years of consecutive data. Interact GDP per capita: log of 2008 GDP per capita interacted with dummies for 2008-09, and with dummies for 2010-11. Robustness tests: No restrict LTD>: condition that a firm had strictly positive LTD before the crisis is dropped; Non-survivor: firms that disappear in 2011 are kept in the sample; 250 empl threshold: a firm is an SME if its average number of employees is below the EU employment threshold of 250. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).

Table A3. Robustness of Table 9 (continued)

		TD/TA			Control interact. GDP per cap
		no restrict LTD>0	non-survivor	250 empl threshold	
Systemic crisis	Main	0.0129	0.00708	0.00655	0.00812
		0.0197***	0.0171**	0.0144*	0.0193***
	Interaction SME	-0.00299	-0.00154	-0.000977	-0.00297
		0.00576	0.00260	0.00755	0.00173
GDP per capita	Main	-0.00838*	-0.00824	-0.00873	.
		-0.00653**	-0.00426	-0.00797**	.
	Interaction SME	0.0106*	0.0168**	0.0142**	.
		0.0157**	0.0232***	0.0237***	.
Private credit / GDP	Main	-0.000202*	-0.000160	-0.000254**	-9.32e-05
		-0.000212**	-0.000153	-0.000278**	-0.000169
	Interaction SME	0.000344***	0.000340**	0.000396***	0.000247
		0.000418***	0.000364**	0.000450***	0.000231
Bond market cap / GDP	Main	-0.000132	-0.000170*	-0.000142	-0.000187
		-0.000119	-0.000116	-7.16e-05	-9.37e-05
	Interaction SME	0.000231***	0.000187**	0.000131	0.000185**
		0.000309***	0.000169*	0.000112	0.000132
Stock cap / GDP	Main	-0.000312**	-0.000257	-0.000352**	-0.000140
		-0.000346***	-0.000305**	-0.000350**	-0.000290*
	Interaction SME	0.000320	0.000330	0.000396	0.000115
		0.000151	0.000174	0.000186	-0.000162
Investor protection 1	Main	-0.00575*	-0.00441	-0.00604	-0.000743
		-0.00678**	-0.00402	-0.00731*	-0.00323
	Interaction SME	0.00637*	0.00552	0.00667	0.000415
		0.00844**	0.00538	0.00806	0.000461
Investor protection 2	Main	-0.00292	-0.00269	-0.00330*	-0.00167
		-0.00226**	-0.00238*	-0.00275*	-0.00199
	Interaction SME	0.00405	0.00572*	0.00550*	0.00415
		0.00574	0.00840**	0.00764**	0.00621*
Bank contestability	Main	0.00823	0.000732	0.00179	-0.00558
		0.0129**	0.00285	0.00457	0.00163
	Interaction SME	-0.00457	-0.00552	-0.00531	0.00365
		0.00159	-0.00123	-0.000947	0.00849
Resolving insolvency 1	Main	0.00193	-0.000151	0.00108	-0.00349
		0.00185	-0.000388	0.00127	-0.00193
	Interaction SME	-0.00648***	-0.00799***	-0.00800***	-0.00443
		-0.00884***	-0.0102***	-0.0105***	-0.00427
Credit information	Main	-0.00500**	-0.00511*	-0.00567**	-0.00419
		-0.00456***	-0.00427***	-0.00558***	-0.00575**
	Interaction SME	0.00647***	0.0114***	0.00905***	0.00906***
		0.00840***	0.0140***	0.0120***	0.0112***
Country risk	Main	-0.00106	-0.000922	-0.00103	0.000755
		-0.000727*	-0.000484	-0.000743	0.000335
	Interaction SME	0.00114***	0.00157**	0.00149**	-0.00181
		0.00136***	0.00157**	0.00167**	-0.00482

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. A firm is included if it was privately held, and if it has at least 6 years of consecutive data. Interact GDP per capita: log of 2008 GDP per capita interacted with dummies for 2008-09, and with dummies for 2010-11. Robustness tests: No restrict LTD>: condition that a firm had strictly positive LTD before the crisis is dropped; Non-survivor: firms that disappear in 2011 are kept in the sample; 250 empl threshold: a firm is an SME if its average number of employees is below the EU employment threshold of 250. Significance levels: ***: p<0.01, **: p<0.05, *: p<0.1. (Standard errors are in parenthesis).

Table A3. Robustness of Table 9 (continued)

		LTD/TA			
		no restrict LTD>0	non-survivor	250 empl threshold	Control interact. GDP per cap
Systemic crisis	Main	0.00622**	0.00674	0.00369	0.00566
		0.0101***	0.00914**	0.00521	0.00904**
		-0.00423	-0.00630	-0.00336	-0.00576
	Interaction SME	-0.00168	-0.00486	-0.000422	-0.00509
GDP per capita	Main	-0.00414**	-0.00374	-0.00578	.
		-0.00385**	-0.00141	-0.00496	.
		0.00355**	0.00600**	0.00737**	.
	Interaction SME	0.00438**	0.00956***	0.0122***	.
Private credit / GDP	Main	-4.46e-05	8.17e-06	-7.90e-05	6.51e-05*
		-5.84e-05*	1.13e-05	-9.62e-05*	2.35e-05
		9.75e-05***	0.000103**	0.000181***	5.46e-05
	Interaction SME	0.000154***	0.000132**	0.000232***	6.84e-05
Bond market cap / GDP	Main	-3.66e-06	1.62e-05	-1.93e-05	2.64e-05
		-8.24e-06	9.54e-06	-1.44e-05	1.60e-05
		5.29e-05**	1.37e-05	3.96e-05	-7.51e-06
	Interaction SME	8.76e-05**	-1.77e-05	3.90e-06	-4.74e-05
Stock cap / GDP	Main	-0.000101**	-3.36e-05	-0.000106*	1.04e-05
		-0.000130***	-4.14e-05	-0.000113*	-4.97e-05
		0.000116	0.000163	0.000213*	0.000111
	Interaction SME	8.53e-05	0.000171	0.000211	7.75e-05
Investor protection 1	Main	-0.00133	0.000430	-0.00181	0.00310**
		-0.00111	0.00148	-0.00123	0.00310*
		0.00199*	0.00185	0.00397**	-0.000955
	Interaction SME	0.00304***	0.00268	0.00512***	-0.000217
Investor protection 2	Main	-0.00105	-0.00137	-0.00191	-0.000868
		-0.00143**	-0.00146	-0.00252**	-0.00149**
		0.00113	0.00158	0.00187	0.000670
	Interaction SME	0.00176**	0.00265**	0.00341**	0.00142
Bank contestability	Main	0.00616**	0.00406	0.00477	0.00124
		0.00827***	0.00461	0.00564*	0.00419
		-0.00818*	-0.0116**	-0.0108**	-0.00861
	Interaction SME	-0.00828**	-0.0144***	-0.0133**	-0.0116*
Resolving insolvency 1	Main	0.00108	-1.68e-06	0.00123	-0.00120
		0.00157	0.000353	0.00187	0.000183
		-0.00254**	-0.00431***	-0.00475***	-0.00369**
	Interaction SME	-0.00385***	-0.00660***	-0.00711***	-0.00496***
Credit information	Main	-0.00202**	-0.00241	-0.00360*	-0.00174
		-0.00245**	-0.00185	-0.00381*	-0.00267
		0.00248***	0.00470***	0.00497***	0.00383***
	Interaction SME	0.00335***	0.00669***	0.00740***	0.00595***
Country risk	Main	-0.000675***	-0.000730*	-0.000884*	-0.00122***
		-0.000714***	-0.000553	-0.000853*	-0.00211***
		0.000432*	0.000653*	0.000821**	0.000163
	Interaction SME	0.000416*	0.000703*	0.00105**	-0.00104

Note: The dependent variables are respectively the ratio of total financial debt plus trade credit liabilities to total assets (Panel A), the ratio of long-term financial debt at remaining maturity to total assets (Panel B), and the ratio of long-term financial debt at remaining maturity to total financial debt plus trade credit liabilities (Panel C). The estimation method is a generalized least squares linear model with first order autoregressive process (Prais-Winsten estimator), with robust standard errors clustered by country-year, and includes firm fixed effects. Control variables include the ratio of fixed assets to total assets, the ROA, the ratio of sales to total assets, total assets (in USD), and the log of real GDP per capita. A firm is included if it was privately held, and if it has at least 6 years of consecutive data. Interact GDP per capita: log of 2008 GDP per capita interacted with dummies for 2008-09, and with dummies for 2010-11. Robustness tests: No restrict LTD>: condition that a firm had strictly positive LTD before the crisis is dropped; Non-survivor: firms that disappear in 2011 are kept in the sample; 250 empl threshold: a firm is an SME if its average number of employees is below the EU employment threshold of 250. Significance levels: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. (Standard errors are in parenthesis).