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SUBPRIME CRISIS SHOCKWAVES: IMPACTS ON CAPITAL STRUCTURE IN NON-FINANCIAL CORPORATIONS

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Abstract

Based upon a dataset spanning about 2,780 non-financial firms in France over the period 2007- 2019, we explore the impact of the subprime crisis on their leverage ratio and capital structure, comparing the experience of the largest listed and unlisted non-financial corporates. Our results highlight that both listed and unlisted corporates tend to reduce their overall indebtedness ratios during the subprime crisis period and its aftermath, generalizing a significant corporate deleveraging for listed and unlisted firms especially during the post-crisis period. In addition, our findings show that listed corporates become more dependable on short- and medium-term credits than the long-term which may increase the exposure of these corporates to credit and liquidity shocks. While our outcomes reveal a clear preference to long-term debt for unlisted firms by expanding their debt maturities, relying on long-term credits and reducing their dependence on short- and medium-term debt which burden these corporates with short-term charges and payments that cannot afford during the crisis and post-crisis periods.

Keywords

Capital Structure, Corporate Leverage, Sources of Funding, Financial Crisis, Debt Ratio, Debt Maturities

JEL classification : B26, C23, G32

1. Introduction

The subprime crisis of 2008 is considered by many economists to be the most severe crisis since the Great Depression of the 1930s (Mian and Sufi, 2009; Melvin and Taylor, 2009; Kahle and Stulz, 2010). As an exogeneous shock, this financial crisis impacted non-financial corporates' capital structure and their financing decisions, regardless of their field of activities or size. One of the most important decisions that corporate managers have to make is regarding the capital structure. Capital structure is the specific composition of debt and equity used by a company to finance its overall operations and growth. The capital structures of financial and non-financial enterprises are distinct due to the different nature of operations and financial conditions.

Our study examines the impact of the subprime crisis on both listed and unlisted large non-financial corporates' capital structure in France. France is considered a bank-based economy as non-financial corporates rely on the banking sector to get funds in order to finance their investments (Bijlsma et al., 2013). In UK and USA, common law and market-based governance structure are the norm. Whereas France and Germany have codified law and bank-based governance structure. Japan is a composite of the two (Antoniou et al., 2008).

Bancel and Mittoo (2011) report that non-financial corporate firms were more affected in France than in UK British and Germany during the subprime crisis, as they resorted extensively to commercial loans.

Indeed, the non-financial corporates in France are more vulnerable to any financial crisis more than a market-based economy such United States of America (USA) or United Kingdom (UK), as they are more susceptible to the deterioration in bank loan availability.

In this paper, we make two new contributions to the literature. First, we detect the impact of the subprime crisis on firms' leverage ratio[1] and how this ratio changed during and after this crisis period. Second, we emphasize on the effect of subprime crisis on different financial ratios that represent non-financial corporates' capital structure in order to find out what sort of debt these firms relied on during the crisis and post-crisis periods and how the subprime crisis affects the composition of the capital structure for these firms.

The results of our study provide insights into the impact of the subprime crisis on the capital structure and the leverage ratio of the largest non-financial corporates in a large open economy in which large listed and unlisted firms continue to be the initial dynamo and contributor of its economic growth. Add to that, our findings find out the extent of reliance on long-term debt or short- and medium-term debt as financing sources during the subprime crisis period and its aftermath.

The rest of our study is organized as follows: Section two presents the theoretical and empirical literature review concerning the impact of the financial crisis on firms' capital structure and leverage ratio. Section three presents the construction of our empirical model and describes research methodology followed by a brief description of our data in section four. Empirical findings and the analysis are presented in section five. Finally, section six summarizes and concludes the paper.

2. Capital structure, leverage ratio and financial crisis

2.1 Theoretical literature review

Financial theories and previous experience suggest and affirm that financial crisis affects the capital structure of firms through several paths and mechanisms. During crisis or downturn period, as uncertainty and risk increase and expected returns decrease, lenders and borrowers become unwilling to tie up capital in long-term investments (Gürkaynak and Wright, 2012). From the point of view of lenders, due to the increased probability of default, the term premium [2] at which they are willing to lend, rises significantly during financial distress making long-term debt[3] less attractive compared to short-term debt[4] (Dick et al., 2013).

Financial institutions with deteriorating balance sheets can also expand their credit lines and further increase their term premium. As uncertainty or risk rises and the business outlooks become cloudier and doubtful, companies that are not in a good position to commit to an aggregate maturity structure may also diminish their debt maturity and leverage. For example, as per the "Rat Race" capital structure model for Brunnermeier and Oehmke (2013), high volatility incentivizes firms to shorten the maturity of debt, despite the high refinancing costs associated with short-term debt, because it dilutes the gains to long-term investors. Brunnermeier and Oehmke's "Rat Race" capital structure model suggests that, when intermediate information is primarily about the probability of default rather than recovery in default, short-term financing is the unique equilibrium. This means that the impulse to shorten the maturity structure is strong especially during periods of high volatility, such as financial crisis when investors expect to receive intermediate information about default. They also demonstrate that if firms value financial flexibility in turbulent and unstable economic conditions, they will be less willing to engage and undertake long-term contracts with covenants, and the demand for long-term contracts will be lower. Thus, during economic and financial downturns, new long-term debt issuance may decline, and new debt issuance will have shorter maturities (Diamond and al., 2014).

The maturity structure of corporate debt is pivotal because it defines the proportion of assets that are financed by liabilities that expose the firm to rollover risk. Therefore, a decrease in the maturity of corporate debt effectuates a shift of refinancing risks to the companies and not to their lenders, and these refinancing risks can have a deleterious and damaging impact on long-term productive investment and affect negatively corporate performance and its growth opportunities (Milbradt and Oehmke, 2015).

When bad news spread and widespread uncertainty occur, the curtailment of debt maturities accompanying the de-leveraging are potentially more important in environments where contracts are difficult to carry out and execute such as countries where bankruptcy laws and procedures are costly such the liquidation of assets (Diamond, 2004).

According to Michaelas et al. (1999), moral hazard and adverse selection are high and well pronounced in private non-financial listed and unlisted corporates due to the strong asymmetric information and control considerations in these firms. In addition, as per the credit rationing theory, the adverse selection and moral hazard

[1] Leverage ratio is a financial ratio that indicates the level of debt incurred by a business entity against several other accounts in its balance sheet, income statement, or cash flow statement. This ratio indicates how the corporate's assets are financed using debt or equity.

[2] Term premium -by definition- is the difference between the amount of money any person can get by locking up his money in long-term investments, and what he would get if he just ran short-term investments for the same period.

[3] Long-term debt is debt that matures in more than five years.

[4] Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt.

problems lead to credit rationing in the lending market (Stiglitz et al., 1981). Moreover, the cost of external financing will increase due to asymmetry information for these firms (Berger et al., 2002). All these problems can be exacerbated during a financial crisis or economic turbulence periods, suggesting that the determinants of capital structure, financing decisions and investment policies for these firms may be affected by credit supply shocks (Michaelas et al., 1999).

Leary (2009) introduced a model in which the availability of bank loans plays an important and significant role in the determination of the firm's capital structure regardless if they have access to debt markets. This model shows that the sensitivity of the capital structure for large firms due to a shock in the bank loan supply, is much lower than the small and medium bank-dependent corporates. And this is due to the ease of getting access to the capital markets form large firms.

2.2 Empirical literature review

Likewise, Voutsinas et al. (2011) and based on the analysis of the capital structure of 1537 listed Japanese firms from 1980 to 2007, demonstrate and confirm that extreme conditions credit supply in Japan have negatively affected the leverage ratios for the firms. They affirmed that financial policy decisions are indeed driven by monetary conditions and credit supply. Add to that, based on their findings, small business faced severe financial constraint during economic turbulence periods: the burst of the land value bubble of the 1980s and the financial crisis of 1998. Balsari et al. (2008) tested the effect of the different economic crises on the capital structure's determinants. They took several economic crises such as the Mexican economic crisis that happened in 1994 and the recession that happened in the most developed countries in 2000-2001. They used different dependent variables such as: total debt to total assets ratio; total debt to equity ratio; total long-term debt to total assets ratio and total short debt to total assets ratio. They stated a negative impact of 1994 crisis on Turkish firms leverage ratios. On the other hand, they reported that the increase of the short-term debt and the decline of the equity's level for Turkish's companies caused a positive impact of the 2000-01 crisis on the firm's leverage ratios.

Bruno (2009) reported the same findings concerning the effect of a financial shock in the banking system and its effect on the financing decisions for small non-financial corporates. In the same way, numerous studies support this point of view indicating that the impact of the bank credit supply shocks is stronger on financing decisions for unrated and small firms more than the large and listed corporates (Bae et al., 2002 and Akiyoshi et al., 2010).

Chava et al. (2011) showed evidence that the variations in the supply of bank loans can heavily affected the leverage ratios of firms that are highly dependent on credits that come from the U.S. banking sector. While other studies suggest that a credit supply shock has weak effect on firm's financing mix: Lemmon et al. (2010) find a trivial and negligible impact of credit crunch on firm's leverage and capital structure. Similarly, Lin et al. (2010) did not find any significant link between the credit contractions and firm's leverage. We can mention also the study of Kahle et al. (2010): They did not find any clear proof of credit squeeze to small firms in the aftermath of the 2008 financial crisis.

Kim et al. (2002), tested the impact of the credit crunch on the Korean firms under the Asian financial crisis in 1997. Their study shows that there has been a credit crunch in the credit market for small and medium-sized firms. while it reveals much weaker evidence in the credit market for large firms. The negative impact of the shrinkage of credit supply which is measured by a decrease in the capital-asset ratio[5], was also demonstrated by Akiyoshi and Kobayashi (2010) for Japan during the period of the Asian financial crisis (1997-1998).

Demirgüç-Kunt et al. (2015) find that after taking firm characteristics into account, the significant decrease in leverage and long-term debt financing was notably pronounced among private small and medium-sized firms. On the other hand, the firms that are listed on a stock exchange, register a weak significant reduction in debt ratios and in the maturity of debt due to its large size and ability to have easier access to capital market financing. For these companies, on the contrary, their leverage and debt maturity ratios seem to have increased at the onset of the crisis in some cases. They also illustrated that there are complicated linkages between the evolvement of the capital structure of firms and its changes on the one hand and the characteristics of countries on the other hand during and immediately after the crisis. Their results reveal that the existence of a robust financial infrastructure, such as credit information sharing, insolvency regulations, and investor's protection, has helped to alleviate the impact of the global financial crisis on capital structures, both for large publicly listed firms and for SMEs as well.

Deesomsak et al. (2004) studied the impact of the Asian financial crisis on the leverage ratios in 1997. Based on the collected data for 1527 non-financial listed firms from four countries with different legal, financial and institutional environments which are: Australia, Malaysia, Singapore, and Thailand, for the period 1993 to 2001, they reported that the leverage ratios increased significantly during the aftermath of the crisis, but the trend reversed in 2000. In addition, the capital structure decision depends not only on the firm's own characteristics, but

[5] The capital-to-asset ratio calculates a company's assets and capital to determine whether there is enough capital to cover the assets, expressed as a percentage.

also on the legal environment, corporate governance and institutional framework of the countries in which the firm works.

Kim et al. (2006) investigated the impact of the 1998 Asian financial crisis on the leverage ratios in Korea using unbalanced panel data from 1985 to 2002. Using restricted and unrestricted dynamic models, they reported that the financial crisis affected negatively the optimal capital structure for the Korean listed manufacturing companies. They also studied the effect of chaebol-affiliation[6] on the optimal level of leverage. They found that non-chaebol-affiliated firms had lower optimal leverage and they adjust their capital structure slower than chaebol-affiliated firms.

Similarly, Ariff et al. (2008) examined the factors driving capital structure adjustment and its speed for financially constrained and healthy firms during the Asian financial crisis in four different countries: Korea, Indonesia, Malaysia and Thailand for the period 1986-2001. They found that financially distressed firms register significantly higher levels of debt ratios[7] than firms that are not financially troubled. Before 1997, the debt ratio of distressed firms was 0.167 and that of healthy firms was 0.108. Whereas the post-crisis debt ratio ranged from 0.627 to 0.74 for distressed firms, while non-distressed firms had a ratio between 0.35 and 0.423. Add to that the proportion of the short-term debt was (0.509 - 0.669) for distressed firms compared to 0.30 for healthy firms.

Deesomsak et al. (2009) indicate that firms in countries which were affected by the 1997 Asian financial crisis had the slower capital structure speed of adjustment. On the other hand, firms in countries which were most affected by the crisis, stick to their speed of adjustment. They analysed the Asian financial crisis focusing on the debt maturity structure of firms by comparing pre- and post-crisis periods. As a result, they found that the maturity structure of any firm is the result of its own characteristics and the economic environment as well.

Based on the analysis of 12.857 Portuguese SMEs over the period 2007-2010, Laureano et al. (2014) report a downward trend on their debt ratios after the financial crisis in 2008. They stated a positive correlation between the crisis dummy variable and the leverage represented by three different variables (total debt; short-term debt and long-term debt) which implies that after the financial crisis, companies tend to diminish their level of indebtedness. They attributed their findings to two main reasons: First, the difficulty to have access on bank's credit. Second the decrease of credit supply for these firms especially during the fourth quarter of 2008.
According to Brun et al. (2013), the increase in undistributed (retained) earning especially for SMEs and the increase in equity premiums collected by large firms, led to a significant increase of the French firms after the crisis.

Iqbal et al. (2014) studied the impact of the global financial crisis that occurred in 2008 on the capital structure of listed firms that mainly operate in non-financial and non-utility sectors. Their final sample consists of 871 firms listed on London Stock Exchange for UK; 564 firms listed on Euronext Paris for France and 392 firms listed on Frankfurt Stock Exchange. They used a fixed effect model based on a panel approach including a crisis and post-crisis dummies in order to capture the impact of the financial crisis. They also relied on t-test to check the differences in mean leverage ratios, debt and equity levels between different periods: pre-crisis; crisis and post-crisis. They report a significant increase from pre-crisis to crisis period and then return to pre-crisis levels in Germany and UK. While these changes are insignificant over the three period for French corporates. Their findings show that conservative firms (that had lower than industry mean leverage ratio during pre-crisis period) experience a progressive increase in their leverage during the crisis and post-crisis periods. On the other hand, aggressive firms (that had higher than industry mean leverage ratio during pre-crisis period) register a significant decrease in the leverage ratios and especially in the post-crisis period primarily due to some changes that affects their equity levels. They found that the financial crisis of 2007-2008 had a significant impact on firm's leverage ratios in both market economies (UK) and banking economies (Germany and France).

Overall, the previous literature offers mixed results on changes in the structure of capital over different crisis periods in distinct countries and institutional settings.

3. Methodology

3.1 Empirical model

To the best of our knowledge, no study no study has adequately covered and discussed financing decisions as a function of both demand and supply side frictions. The majority of the previous studies (Daskalakis et al., 2008; Vergas et al., 2015; Adair et al., 2015) modelled the financing decisions from the demand side only.

Whereas the studies that focused on the demand side, based on the Modigliani and Miller's (1958) assumption of frictionless supply of capital, they modelled the financing mix and the determinants of firm's capital structure as a function of demand side frictions:

[6] According to the definition by the Korean Fair-Trade Commission (KFTC), a chaebol or business group refers to a group of companies that holds more than 30 percent of its shares owned by some particular individuals or by companies governed by those individuals. Since 1987, the KFTC has identified and listed business groups each year.

[7] Debt ratio is a metric that measures a company's total debt, as a percentage of its total assets.

$$\mathbf{Y = } f \mathbf{(demand\ factors)} \quad (1)$$

They represented the demand side frictions by a set of firm's characteristics such as (firm's size, age, profitability, growth opportunities, liquidity, tangibility of assets, risk ratio, return-on-assets, return-on-equity…) as follows:

$$\mathbf{Y = } f \mathbf{(firm's\ size,\ age,\ profitability,\ growth\ opportunities,\ liquidity\ldots)} \quad (2)$$

In other words, they neglected the supply side friction pretending that the supply side friction does not affect the financing decisions nor the investments policies and does not determine the capital structure of these firms.

On the other hand, several recent studies (Sufi, 2009; Choi et al., 2010 and Lemmon et al. 2010) highlighted the impact of the supply factors on the financing decisions and capital structure determination. They show that the supply of capital is not frictionless. According to the study of Morellec (2010), the determination of firm's capital structure does not depend only on the firm's characteristics (demand factors), indicating that modeling corporate financing decisions in term of demand side factors only, is insignificant and non-useful. Based on this point of view, they modelled the financing and investments decisions as follows:

$$\mathbf{Y = } f \mathbf{(supply\ factors)} \quad (3)$$

Hence, if the supply of capital (financial supply) proposed by different channels such as banks, financial intermediaries, financial markets…, is uncertain and it has a high risk due to its exposure to financial shocks and credit crunch especially during turbulence and crisis periods. Therefore, we approach this problem by suggesting a model that take in consideration the supply side frictions and the demand side frictions at the same time.

And so, the financing and investments decisions will be modeled as a function of demand shocks (firm's characteristics and its financial situation) and supply shocks (financial crisis) which is our variable of interest, as follows:

$$\mathbf{Y} = \alpha_0 + \beta_1 f(\boldsymbol{demand\ factors})_{it} + \beta_2 f(\boldsymbol{supply\ shocks})_{it} + \mu_{it} \quad (4)$$

We can re-write the model in a simplified form:

$$\mathbf{Y} = \alpha_0 + \beta_1 \eta_{it} + \beta_2 \delta_{it} + \mu_{it} \quad (5)$$

Where η_{it} represents demand shocks and δ_{it} represents supply shocks. The financial crisis period is represented by a dummy variable that takes a value of 1 for years 2008 and 2009 and 0 otherwise. To capture the impact of the crisis and how it affects the firm's leverage in the aftermath of the crisis, we add another dummy variable which is post-crisis period that takes 1 for years from 2010 till 2019 and 0 otherwise.

3.2 Research methodology

Yet, the detection of the impact of financial shocks on firm's financing decisions raises an identification problem. Whereas the main difficulty is to separate and distinguish the real supply effect from the endogenous demand effect on firm's financing decisions (Gan, 2007; Chava et al., 2011). The simultaneous nature of corporate financing and investment decisions makes it difficult to clearly identify credit supply shocks. In order to overcome this problem, our identification strategy is composed of four essential elements.

First, we recognize the exogenous changes in credit supply. The global financial crisis that occurred in 2008 provides us with such an occurrence. For instance, Duchin et al. (2010) state that *"The crisis represents an unexplored negative shock to the supply of external finance for nonfinancial firms".* As the global financial crisis of 2008 stemmed in the subprime market, it can be sufficiently considered as an exogenous to credit's demand because there are factors outside of the economic model that determine the value of the exogenous variable (crisis) and it is imposed on the model. Hence, this exogenous shock allows us to identify and capture the impact of the credit supply shocks on corporate's financing and investment decisions.

Secondly, applying a panel approach, there is a potential to face unobserved heterogeneity. This is because our data contain multiple observation for each corporate. Thus, and in order to address this problem, our adopted model is the fixed effects model. In addition, Jeon at al. (2004) state that the fixed effects model yields unbiased and robust coefficient estimates. In this context, Minguez-Vera et al. (2007) claim that *"... unobservable heterogeneity might result in spurious correlations with the dependent variables, which would bias the coefficients obtained".* Furthermore, since this study focuses on the supply channel, the fixed effects model can be considered as the most suitable and appropriate model for our case. This is because it identifies the effect of credit supply by controlling for the unobserved firm-specific effect. In this regard, Love et al. (2007) assert that the fixed effects model does not only allow to catch the unobserved heterogeneous firm characteristics over time, but also to

distinguish and differentiate the post-crisis effect from the pre-crisis effect. As well, the fixed effects model effectively controls for observable and unobservable firm characteristics (Gan, 2007) and firm heterogeneity (Mateut et al., 2006). Therefore, the fixed effects regression model and the final simplified version of our adopted model that we use in this study is shown below:

$$\mathbf{Y} = \boldsymbol{\alpha}_0 + \boldsymbol{\lambda}_{1i} + \boldsymbol{\beta}_1 \boldsymbol{\eta}_{it} + \boldsymbol{\beta}_2 \boldsymbol{\delta}_{it} + \boldsymbol{\mu}_{it} \quad \textbf{(6)}$$

Where α_0 is the constant; λ_{1i} represents the firm fixed effects; β_1 and β_2 are the coefficients of interest which measures the effect of demand shock (η_{it}) and supply shock (δ_{it}) respectively and finally μ_{it} is the error term.

Thirdly, in order to take into account and control for variations over time (time-variant changes) in the observable determinants of corporate's leverage, the supply side frictions (represented by two dummy variables which are crisis and post-crisis) are interacted with the demand side factors as control variables. Thus, our model can be written as follows:

$$\mathbf{Y} = \boldsymbol{\alpha}_0 + \boldsymbol{\beta}_1 \boldsymbol{\eta}_{it} + \boldsymbol{\beta}_2 \boldsymbol{\delta}_{it} + \boldsymbol{\beta}_3 \boldsymbol{\eta}_{it} * \boldsymbol{\delta}_{it} + \boldsymbol{\mu}_{it} \quad \textbf{(7)}$$

Fourthly and our last component of our identification strategy is the selection of a set of independent variables which are a series of firm characteristics that are used as a proxy of firm's demand. Based on the literature review, we chose the following variables that consistently determine firm's capital structure and affect its financing decisions: firm's size; profitability; growth opportunities; tangibility of assets; liquidity; solvency; return-on-assets (ROA). The two dummies' variables are: crisis dummy presented by (CD) which takes a value of 1 for the following years 2008 and 2009, and 0 otherwise; and post-crisis dummy presented by (POCD) which takes 1 for years from 2010 till 2019 and 0 otherwise. The method of calculation of each variable is mentioned in the table 4.

The expanded and detailed model with all the interaction terms between the crisis (CD) and post-crisis dummy (POCD) variables and all the independent variables (X_{it}) can be represented as follows:

$$\begin{gathered}\boldsymbol{Y_{it}} = \boldsymbol{\alpha}_0 + \boldsymbol{\beta}_1 \boldsymbol{Size_{it}} + \boldsymbol{\beta}_2 \boldsymbol{Liquidity_{it}} + \boldsymbol{\beta}_3 \boldsymbol{Solvency_{it}} + \boldsymbol{\beta}_4 \boldsymbol{Tangibility_{it}} + \\ \boldsymbol{\beta}_5 \boldsymbol{Growth\ opp_{it}} + \boldsymbol{\beta}_6 \boldsymbol{Profitability_{it}} + \boldsymbol{\beta}_7 \boldsymbol{ROA_{it}} + \boldsymbol{\beta}_8 \boldsymbol{CD} + \boldsymbol{\beta}_9 \boldsymbol{POCD} + \\ \boldsymbol{\beta}_{10} \boldsymbol{Size} * \boldsymbol{CD_{it}} + \boldsymbol{\beta}_{11} \boldsymbol{Liquidity} * \boldsymbol{CD_{it}} + \boldsymbol{\beta}_{12} \boldsymbol{Solvency} * \boldsymbol{CD_{it}} + \boldsymbol{\beta}_{13} \boldsymbol{Tangibility} * \boldsymbol{CD_{it}} \\ + \boldsymbol{\beta}_{14} \boldsymbol{Growth\ opp} * \boldsymbol{CD_{it}} + \boldsymbol{\beta}_{15} \boldsymbol{Profitability} * \boldsymbol{CD_{it}} + \boldsymbol{\beta}_{16} \boldsymbol{ROA} * \boldsymbol{CD_{it}} + \\ \boldsymbol{\beta}_{17} \boldsymbol{Size} * \boldsymbol{POCD_{it}} + \boldsymbol{\beta}_{18} \boldsymbol{Liquidity} * \boldsymbol{POCD_{it}} + \boldsymbol{\beta}_{19} \boldsymbol{Solvency} * \boldsymbol{POCD_{it}} + \\ \boldsymbol{\beta}_{20} \boldsymbol{Tangibility} * \boldsymbol{POCD_{it}} + \boldsymbol{\beta}_{21} \boldsymbol{Growth\ Opp} * \boldsymbol{POCD_{it}} + \boldsymbol{\beta}_{22} \boldsymbol{Profitability} * \\ \boldsymbol{POCD_{it}} + \boldsymbol{\beta}_{23} \boldsymbol{ROA} * \boldsymbol{POCD_{it}} + \boldsymbol{\mu}_{it}\end{gathered} \quad \textbf{(8)}$$

In order to take a deep look on listed and unlisted firm's capital structure and how the financial crisis affected their financing decisions, we run several regressions using different debt ratios and their maturities. The dependent variable Y_{it} is presented by the following variables: total debt to total assets (TD/TA); long-term debt[8] to total assets (LTD/TA); long-term debt to total debt (LTD/TD); short and medium-term debt[9] to total assets (SMTD/TA) and finally short and medium-term to total debt (SMTD/TD).

4. Data

4.1 Data description

Our firm-level data covers the period 2007-2019 and it is extracted from Diane database compiled by Bureau Van Dijk. Diane is a database that allows us to access the financial data of French companies only that have published their annual accounts with the "Greffes des Tribunaux de Commerce". In order to attain the objectives of this study, we took only the non-financial French corporates from the database. We excluded all the financial corporations that operate in the financial sector such as banks, financial institutions, insurance companies… This study aims to detect and capture the impact of the financial crisis on the large non-financial firms. So, we excluded all the startups, small businesses and small and medium-sized enterprises (SMEs) from our sample, so we took the capital amount as the main criterion to identify and distinguish large firms from the others. So, all the companies included in our sample have a minimum capital of 10 million euro. Then we divided our sample into two parts: listed and unlisted corporates in order to compare the different financing modalities and which firms are the most affected by the financial crisis. Our final sample in total comprises 2780 firms, including 70 listed large non-financial firms and

[8] Long-term debt is classified as debt that is due to mature more than five years.

[9] Intermediate or medium-term debt is classified as debt that is due to mature in two to five years.

2710 unlisted large non-financial corporates. Which makes around 97.5% of firms are unlisted and only about 2.5% of the firms are listed in our data sample. In addition, to address the outlier problem, we winsorized the top and bottom 2.5% of all variables.

4.2 Summary statistics

Listed firms						
	Mean	**Median**	**Min**	**Max**	**Std. Dev.**	**No. of obs.**
TD/TA	0.3326	0.3844	0.0000	0.7483	0.2415	902
LTD/TA	0.0652	0.0009	0.0000	0.2954	0.0911	808
LTD/TD	0.1690	0.0843	0.0000	0.6764	0.1989	652
SMTD/TA	0.2729	0.2849	0.0000	0.6761	0.2095	902
SMTD/TD	0.8428	0.9561	0.3262	1.0000	0.1964	701
Unlisted firms						
	Mean	**Median**	**Min**	**Max**	**Std. Dev.**	**No. of obs.**
TD/TA	0.3379	0.3200	0.0000	0.9554	0.2949	33,872
LTD/TA	0.0253	0.0000	0.0000	0.4237	0.0849	33,492
LTD/TD	0.0680	0.0000	0.0000	0.8242	0.1844	25,439
SMTD/TA	0.3087	0.2740	0.0000	0.9307	0.2825	33,872
SMTD/TD	0.9322	0.9961	0.1682	1.0000	0.1845	25,636

Table 1. Descriptive statistics for dependent variables

Table 1 represents the descriptive statistics for all the dependent variables in our study. The information is confined to largest 2,780 French non-financial corporates divided into two categories: 2,710 unlisted firms, and 70 listed firms. We show the descriptive statistics for both listed firms and unlisted firms. A few findings are worth noting. Generally, there is an indication that total debt constitutes about one-third of the capital structure for both listed (33.26%) and unlisted firm (33.79%). Thus, the large listed and unlisted non-financial corporates in France that have at least 10 million euros as capital, appear to be mainly equity financed. Whereas 2/3 of the capital structure of all these firms is financed by equity. We can see clearly that 6.52% of the total assets for listed firms is financed by long-term debt. Whereas only 2.53% of the total assets for unlisted firms is financed by long-term debt, meaning that listed firms rely more than unlisted firms on long-term credits and debt to raise funds to finance their assets. However, unlisted firms rely more on short and medium-term debt to finance their assets more than the listed firms. Concerning the gearing ratios, we can observe crystally that both listed and unlisted firms have extremely high gearing ratios 5990% for listed firms and 4156% for unlisted firms.

5. Empirical results and analysis

	Firms Listed				
	TD/TA	**LTD/TA**	**LTD/TD**	**SMTD/TA**	**SMTD/TD**
SIZ	0.0689433**	0.0016275	-0.231299	0.0685527***	0.0230492
	(0.013)	*(0.895)*	*(0.462)*	*(0.006)*	*(0.463)*
LIQ	-0.0178607***	-0.005628**	-0.0154433	-0.0120032**	0.0154313
	(0.004)	*(0.043)*	*(0.133)*	*(0.034)*	*(0.133)*
SOL	-0.0071744***	-0.0023558***	-0.004737***	-0.0046845***	0.004718***
	(0.000)	*(0.000)*	*(0.005)*	*(0.000)*	*(0.005)*
GRO	0.2072424	-0.0758064	-0.3294453	0.2995578	0.3290271
	(0.551)	*(0.624)*	*(0.326)*	*(0.341)*	*(0.325)*
TAN	0.029359**	-0.0016085	-0.0955263**	0.0312512***	0.0955343**
	(0.027)	*(0.784)*	*(0.043)*	*(0.009)*	*(0.042)*
PRO	-306.0471	-301.2323	-903.6064	40.25149	905.6237
	(0.705)	*(0.401)*	*(0.264)*	*(0.956)*	*(0.262)*
ROA	0.0184164	0.0069978	0.0091762	0.0105114	-0.0091861
	(0.101)	*(0.161)*	*(0.478)*	*(0.300)*	*(0.477)*
CD – 2008-09=1	-0.2780191	-0.359426*	-0.5052904	0.1212441	0.5062112
	(0.533)	*(0.070)*	*(0.266)*	*(0.763)*	*(0.264)*
POCD – 2010-19=1	-1.058141***	-0.493045***	-0.8084863**	-0.5231698	0.806935**
	(0.009)	*(0.006)*	*(0.046)*	*(0.153)*	*(0.046)*
SIZ*CD	0.0185514	0.017824	0.198638	-0.0010814	-0.0199913
	(0.501)	*(0.145)*	*(0.492)*	*(0.965)*	*(0.488)*

LIQ*CD	-0.0060023	0.0025341	0.0121244	-0.0087725	-0.0122617
	(0.464)	*(0.487)*	*(0.398)*	*(0.236)*	*(0.391)*
SOL*CD	0.0004548	0.0010922	0.0016298	-0.0007757	-0.00162
	(0.771)	*(0.117)*	*(0.365)*	*(0.584)*	*(0.376)*
GRO*CD	-0.1359854	0.433267	0.1725068	-0.1967338	-0.1713362
	(0.740)	*(0.812)*	*(0.657)*	*(0.595)*	*(0.659)*
TAN*CD	-0.0021076	0.0011832	0.0427746	-0.0037879	-0.0425726
	(0.884)	*(0.854)*	*(0.360)*	*(0.772)*	*(0.362)*
PRO*CD	-75.14756	455.381	1147.115	-577.4566	-1149.851
	(0.934)	*(0.261)*	*(0.214)*	*(0.483)*	*(0.212)*
ROA*CD	-0.0246273**	-0.0085054	-0.0077038	-0.0152862	0.0076705
	(0.046)	*(0.121)*	*(0.584)*	*(0.171)*	*(0.585)*
SIZ*POCD	0.0611541**	0.260226**	0.0361276	0.0332174	-0.0361003
	(0.014)	*(0.019)*	*(0.160)*	*(0.139)*	*(0.160)*
LIQ*POCD	0.007344	0.0039203	0.0154551	0.0032207	-0.0154668
	(0.249)	*(0.166)*	*(0.141)*	*(0.576)*	*(0.140)*
SOL*POCD	0.0015531	0.0011992*	0.003041*	0.0002127	-0.0030261*
	(0.301)	*(0.073)*	*(0.071)*	*(0.875)*	*(0.072)*
GRO*POCD	-0.0333016	0.1394797	0.3814817	-0.1906015	-0.3805982
	(0.928)	*(0.396)*	*(0.295)*	*(0.568)*	*(0.295)*
TAN*POCD	0.0871448***	0.0391623***	0.1208476***	0.0470388**	-0.1207742***
	(0.000)	*(0.000)*	*(0.004)*	*(0.018)*	*(0.004)*
PRO*POCD	428.5276	344.8055	866.8247	45.32867	-869.0925
	(0.595)	*(0.350)*	*(0.280)*	*(0.950)*	*(0.278)*
ROA*POCD	-0.0174957	-0.0075925	-0.0142298	-0.0090382	0.0141488
	(0.132)	*(0.142)*	*(0.286)*	*(0.390)*	*(0.288)*
Constant	-0.2757045	0.1942916	0.8701665*	-0.5008494	0.1328387
	(0.533)	*(0.323)*	*(0.071)*	*(0.210)*	*(0.782)*
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
R-squared	*0.2582*	*0.1463*	*0.0728*	*0.1806*	*0.0728*
F-statistic	*11.60*	*4.15*	*2.62*	*8.73*	*2.62*
P-value (F-statistic)	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
No. of observations	*726*	*726*	*726*	*726*	*726*

, **, * Significant at 10%, 5%, 1% levels, respectively. P-values are in parentheses.*

Table 3. The effect of the subprime crisis on unlisted firm's capital structure

	Unlisted firms				
	TD/TA	**LTD/TA**	**LTD/TD**	**SMTD/TA**	**SMTD/TD**
SIZ	0.030261***	0.0118532***	0.0249887***	0.0181834***	-0.024928***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
LIQ	-0.0042981***	0.0006239*	0.0030994***	-0.0052113***	-0.003082***
	(0.000)	*(0.052)*	*(0.000)*	*(0.000)*	*(0.000)*
SOL	-0.0079206***	-0.0006729***	-0.0009244***	-0.0069712***	0.0009225***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
GRO	-0.0793072**	-0.0054577	0.0004764	-0.0717464*	-0.0003739
	(0.050)	*(0.690)*	*(0.988)*	*(0.075)*	*(0.990)*
TAN	0.003405***	-0.0002047	-0.0012694	0.0037366***	0.0012551
	(0.005)	*(0.614)*	*(0.164)*	*(0.002)*	*(0.168)*
PRO	-12.94787	6.125153*	4.461026	-19.5417*	-4.357782
	(0.235)	*(0.097)*	*(0.581)*	*(0.072)*	*(0.589)*
ROA	0.0009448	0.0000512	-0.0001636	0.0002531	0.0001582
	(0.252)	*(0.854)*	*(0.797)*	*(0.758)*	*(0.803)*
CD – 2008-09=1	-0.1084729**	0.0274492*	0.0876272**	-0.1361661***	-0.0867327**
	(0.024)	*(0.091)*	*(0.016)*	*(0.004)*	*(0.017)*
POCD – 2010-19=1	-0.1171635***	0.0268526*	0.0310927	-0.1435937***	-0.0314228**
	(0.005)	*(0.059)*	*(0.328)*	*(0.001)*	*(0.022)*
SIZ*CD	-0.0011916	-0.0032372**	-0.0074918***	0.0024012	0.0074255**
	(0.753)	*(0.012)*	*(0.009)*	*(0.526)*	*(0.010)*
LIQ*CD	-0.0018295*	-0.0005926	-0.0004674	-0.0010521	0.0004683
	(0.089)	*(0.105)*	*(0.590)*	*(0.326)*	*(0.588)*
SOL*CD	0.0014059***	0.0001205*	-0.0000871	0.0012006***	0.0000843
	(0.000)	*(0.085)*	*(0.578)*	*(0.000)*	*(0.590)*

GRO*CD	-0.0355557	-0.0118985	-0.0329541	-0.018634	0.0327396
	(0.404)	*(0.408)*	*(0.299)*	*(0.661)*	*(0.301)*
TAN*CD	0.0015039	0.000527	0.0005808	0.0008761	-0.0005804
	(0.296)	*(0.278)*	*(0.598)*	*(0.541)*	*(0.598)*
PRO*CD	9.578625	-2.922619	-8.253107	11.54535	8.152905
	(0.454)	*(0.499)*	*(0.386)*	*(0.365)*	*(0.390)*
ROA*CD	0.0008462	0.0000406	0.0002097	0.0013463	-0.0002039
	(0.403)	*(0.905)*	*(0.787)*	*(0.182)*	*(0.793)*
SIZ*POCD	-0.0056245*	-0.0036849***	-0.0035278	-0.0014128	0.0035603
	(0.090)	*(0.001)*	*(0.160)*	*(0.670)*	*(0.155)*
LIQ*POCD	-0.0030071***	-0.0005412	0.000606	-0.002274**	-0.0006041
	(0.002)	*(0.100)*	*(0.434)*	*(0.018)*	*(0.434)*
SOL*POCD	0.0019512***	0.0001245**	-0.000152	0.0017138***	0.0001502
	(0.000)	*(0.043)*	*(0.266)*	*(0.000)*	*(0.271)*
GRO*POCD	-0.0199763	-0.019718	-0.0405053	0.005239	0.0403178
	(0.590)	*(0.115)*	*(0.139)*	*(0.887)*	*(0.140)*
TAN*POCD	0.0021707*	0.0006765	0.00156*	0.0012954	-0.0015402*
	(0.076)	*(0.102)*	*(0.092)*	*(0.288)*	*(0.004)*
PRO*POCD	21.28193*	-3.330926	-2.821151	26.46262**	2.683312
	(0.058)	*(0.379)*	*(0.733)*	*(0.018)*	*(0.745)*
ROA*POCD	-0.000404	0.0001541	0.0002891	-0.0001247	-0.0002867
	(0.644)	*(0.602)*	*(0.670)*	*(0.886)*	*(0.671)*
Constant	0.46942***	-0.0730513***	-0.1743326	0.527048***	1.173849***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
R-squared	*0.3281*	*0.0264*	*0.0206*	*0.2963*	*0.0205*
F-statistic	*338.60*	*25.80*	*19.21*	*272.13*	*19.18*
P-value (F-statistic)	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
No. of observations	*31,411*	*31,411*	*31,411*	*31,411*	*31,411*

, **, * Significant at 10%, 5%, 1% levels, respectively. P-values are in parentheses.*

Table 2. The effect of the subprime crisis on listed firm's capital structure

We report the results from estimating the effect of the subprime crisis on capital structure for listed and unlisted firms respectively in table 2 and 3.

Table 2 shows the estimations focusing on the listed firm's capital structures ratios: Total debt to total assets (TD/TA); long-term debt to total assets (LTD/TA) and long-term debt to total debt (LTD/TD) over the period 2007-2019. We choose to use three different dependent variables in order to detect the real impact of the financial on the firm's capital structure. The first two dependent variables (TD/TA; LTD/TA) measure the debt ratios, while the third one (LTD/TD) represents the debt maturity ratio. Our models take into account the time-varying firm characteristics and firm fixed effects. The firm fixed effects inclusion controls for all the unobserved firm-level time invariant factors that may impinge capital structures. Our main variables of interest are the crisis and post-crisis dummies. We are interested in the sign (positive/negative) and the significance level of these variables (1%; 5%; 10%). We also include a set of firm's characteristics (demand factors) as control variables in our models. The interactive terms represent the change in response relative to the pre-crisis period.

Examining the models and its estimated coefficient in table 2, we find that the two debt ratios (TD/TA) and (LTD/TA) all decreased during the early years of the global financial crisis (2008-2009). But only the coefficient of the crisis period (CD) in the (LTD/TA) model is significant at 10%. Its coefficient is negatively correlated with the Long-term debt to total assets ratio (LTD/TA). This implies that the crisis has a negative impact on listed firm's long-term debt ratios. In other words, the long-term debt flow was reduced by the listed firms during the crisis period. Furthermore, we find that the post-crisis dummy variable is significant in the first three models reported in table 4. Its coefficients are negatively correlated with total debt to total assets ratio and long-term debt to total assets ratio and significant at 1%. Meaning that post-crisis variable negatively affects the debt ratios. In other words, the listed firms tend to reduce their overall indebtedness and decrease their debt ratios in the aftermath of the crisis due to lack and scarcity of bank loans during the post-crisis period. This suggest that the credit supply is consider as fundamental determinant of firm's capital structure and plays an important role in firm's decisions-making concerning the financing strategy since total debt includes all forms of debt, which implies that aggregate external financing activities of listed firms have shrunk in response to credit supply shocks. This suggest also that these firms may search for alternative financing sources such as equity issuance, debt issuance, trade credit… or rely on debt with shorter maturity dates (such as short- and medium-term debt) to compensate the decrease of bank credits.

The firm's size variable is positively correlated with the total debt to total assets ratio, and it is significant at 5%. It means that an increase in listed firm size will be accompanied by higher leverage and indebtedness ratios. Firm's liquidity and solvency ratios are negatively correlated with both debt ratios (TD/TA and LTD/TA) and statistically significant. This implies that firms with high liquidity and solvency ratios, tend to reduce their debt ratios and rely less on debt to provide funding to finance their investments. Add to that the solvency ratio is also negatively correlated with LTD/TD ratio and it is significant at 1%, which means that firms with higher solvency ratios tend to rely more on shorter debt maturities as expected because these firms have the ability to commit to short-term debt regardless its high costs. The positive coefficient of the tangibility of assets variable in the TD/TA model indicates that more tangible assets the company owns, the more it relies on debt. Meanwhile, the negative sign of the tangibility of assets variable the in the LTD/TD model, indicates that more tangible assets the firm owns, the shorter its debt maturities will be.

We found also a positive and statistically significant effect of the post-crisis dummy variable on the SMTD/TD ratio. Meaning that the listed firms tend to increase their dependence and reliance on short and medium-term debt during the post-crisis period. Which indicates that listed firms can bear short-term burdens due to the availability of sufficient liquidity and solvency during the pre-crisis period. The negative coefficients of the post-crisis dummy variable in both LTD/TA and LTD/TD regressions and the positive one in the SMTD/TD indicate that the listed firms become more reliable on the short- and medium-term debt and less reliable on long-term debt during the post-crisis period. Our results are in line with Demirgüç-Kunt et al. (2020), who argued that when a supply shock occurred, the firms decrease the use of long-term debt and rely more on shorter debt maturities. This suggest that the credit shock (financial crisis) can affect the debt maturity of the firms and its preferential options concerning debt's type.

In table 3 we explore the impact of the subprime crisis on capital structure among unlisted firms. Starting by the analysis of the first model. We find that the crisis and the post-crisis variables negatively affected the debt ratio (TD/TA) for unlisted firms. Meaning that unlisted firms tend to reduce their debt ratios during the start of the global financial crisis and in the aftermath of the crisis. This decline of the debt ratio is statistically significant at 5% and 1% for the crisis and post-crisis variables respectively. These results parallel the findings of Akbar et al. (2013). Their findings indicate that the credit supply shocks negatively affected the total debt ratios of the private firms in UK. In addition, Demirgüç-Kunt et al. (2020) find a widespread deleveraging in developing and high-income countries during the global financial crisis of 2008 and its immediate aftermath. Turning to long-term debt to total assets, we find again a significant impact of the crisis and post-crisis on long-term debt ratio for unlisted firms, but this time its coefficient's sign is positive. Which means that unlisted firms tend to raise their long-term debt ratios during the crisis period and even after the crisis (post-crisis period). Analyzing the crisis variable and its impact on the debt maturity in the LTD/TD, we deduce positive and significant impact at 5%. Which means that unlisted firms tend to expand their debt maturities and rely more on longer debt maturities during the crisis period. Our findings are in contrast with Demirgüç-Kunt et al. (2020), who argued that when a supply shock occurred, the firms decrease the use of long-term debt and rely more on shorter debt maturities. These results were significant for SMEs and firms that don't have access to capital market financing in both high income and developing countries, even in the countries that did not experience a banking crisis.

The firm's size variable is positively correlated with the debt ratios and debt maturity, and it is significant at 1%. Meaning that an increment in unlisted firm's size, tends to be associated with higher leverage and debt ratios and longer debt maturities. The liquidity variable's coefficient in the TD/TA model has a negative sign and it is significant at 1%. This outcome indicates that unlisted firms with high liquidity ratios tend to use a deleveraging strategy. On the other hand, this variable has a positive and significant impact on the long-term debt ratios and debt maturities. Meaning that these firms with high liquidity ratios would have a preference to issue long-term debt instead of short-term debt and rely more on longer debt maturities. The solvency's coefficients in the following models (TA/TD; LTD/TA and LTD/TD) reported in table 3 reveal an adverse relationship between the solvency ratio and the debt's ratios and maturities. This implies that an increase in solvency ratio for unlisted firms, will lead to a decline in debt ratios and firms tend to use short-term debt rather than long-term ones. Growth opportunities variables is significant at 5% in the TD/TA model. Its negative sign means that the more unlisted firms have growth and expansion opportunities, the probability of adopting a deleveraging strategy will increase, contrary to what the tangibility of asset's coefficient indicate due to its positive sign. For the profitability variable, its positive and significant coefficient implies that unlisted firms that become more profitable, tend to increase their long-term leverage ratio.

Based on the results of SMTD/TA and SMTD/TD regressions, we can conclude that the unlisted firms depend less on the short and medium-term debt during the crisis and post-crisis periods based on the negative and statistically significant coefficients for the crisis (CD) and post-crisis (POCD) dummies in both regressions. Meaning that unlisted firms reduce their dependence and demand on short- and medium-term debts during the crisis and post-crisis periods. This decrease in the short- and medium-term debts in compensated by the increase of long-term credits. Unlisted firms cannot sustain and meet financial charges on the short terms during turbulence periods, thus they prefer long-term credits with long maturity dates to finance their investments.

Variables	Codes	Definition
Firm's size	SIZ	Logarithm of total assets
Liquidity	LIQ	Current assets/current liabilities
Solvency	SOL	(Net profit after tax + depreciation)/total liabilities
Growth opportunities	GRO	Intangible assets/total assets
Tangibility of assets	TAN	Fixed assets/total assets
Profitability	PRO	Earnings before interest and tax/total assets
Return-on-assets	ROA	Net income/total assets
Gearing ratio	TD/TA	Total debt/total assets
Long term debt to total assets	LTD/TA	Long-term debt/total assets
Long-term debt maturity	LTD/TD	Long-term debt/total debt
Small and medium-term debt to total assets	SMTD/TA	Small and medium-term debt/total assets
Small and medium-term debt maturity	SMTD/TD	Small and medium-term debt/total debt

Table 4. variables definition

6. Conclusion

Over the past few years, many European countries have consistently suffered from diverse repercussions of the financial crisis. Practitioners, researchers, and policymakers are focused and concerned with the impact of the crisis on large businesses and enterprises, given the fact that the large firms are the significant driver for the real economy, and it conserve its sustainability. Whereas the large and international businesses play an important role in the economic growth for any country and contribute indirectly in some countries in determining its fiscal and monetary policies. Many countries relied on their largest firms to overcome any turbulence or recession period. This study contributes to the extant literature by examining the impact of the subprime crisis on the capital structure or leverage ratios of the largest listed and unlisted non-financial corporates in France.

Our outcomes reveal that the largest listed non-financial corporates tend to reduce their overall indebtedness ad decrease their debt ratios in the aftermath of the crisis. The main reason for that decrease is the lack and scarcity of bank loans during the post-crisis phase. Especially when we talk about France which is considered as a bank-based economy, where most of the non-financial corporates rely on the banking system to finance their investments. These results parallel the findings of Akbar et al. (2013). Their findings indicate that the credit supply shocks negatively affected the total debt ratios of the private firms in UK. In addition, Demirgüç-Kunt et al. (2020) find a widespread deleveraging in developing and high-income countries during the global financial crisis of 2008 and its immediate aftermath. We find also that listed firms reduced their reliance on long-term debt during the crisis period. The decrease of the long-term debt is compensated by the increase of the short- and medium-term debt. Indicating that listed firms become more dependable on short- and medium-term credits than the long-term ones in the aftermath of the subprime crisis that has negatively affect the banking system in France. Our findings imply that the shortening of debt maturity may increase more and more the exposure of these corporates to credit and liquidity shocks which can deteriorate their performance on the short- and medium-term. Our results are in line with Demirgüç-Kunt et al. (2020), who argued that when a supply shock occurred, the firms decrease the use of long-term debt and rely more on shorter debt maturities. This suggest that the credit shock (financial crisis) can affect the debt maturity of the firms and its preferential options concerning debt's type.

Our results disclose that the largest unlisted non-financial corporates in France tend to reduce their debt ratios during and after the subprime crisis as well which indicates that the credit supply shock resulting from the subprime crisis has negatively affect their total debt ratios. Our outcomes reveal that unlisted corporates tend to increase their long-term debt ratios during the crisis and post-crisis periods as they expand their debt maturities and rely on longer debt maturities during the crisis period as well. While they reduce their reliance on short- and medium-term debt, which burden these companies with short-term charges and payments that cannot afford. Thus, they prefer long-term credits with long maturity dates to finance their investments. Switching from short-term to long-term debt would enhance unlisted corporates' liquidity and working capital without negatively impacting their leverage ratios. However, higher long-term debt would increase company's debt service requirements. Our findings are in contrast with Demirgüç-Kunt et al. (2020), who argued that when a supply shock occurred, the firms decrease the use of long-term debt and rely more on shorter debt maturities.

Finally, we must acknowledge that, although we perform various estimates to check the robustness of our results, we cannot exclude that attrition and survivorship bias may impinge on our estimates of the impact of the crisis and post-crisis on firms' capital structures and leverage ratios.

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