

# Financial Crisis and capital structure decisions.

## EX-POST ASSESSMENT

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**SÍLVIA FONTE SANTA**

# Agenda

**1.**

Motivation

**2.**

Methodology and Data

**3.**

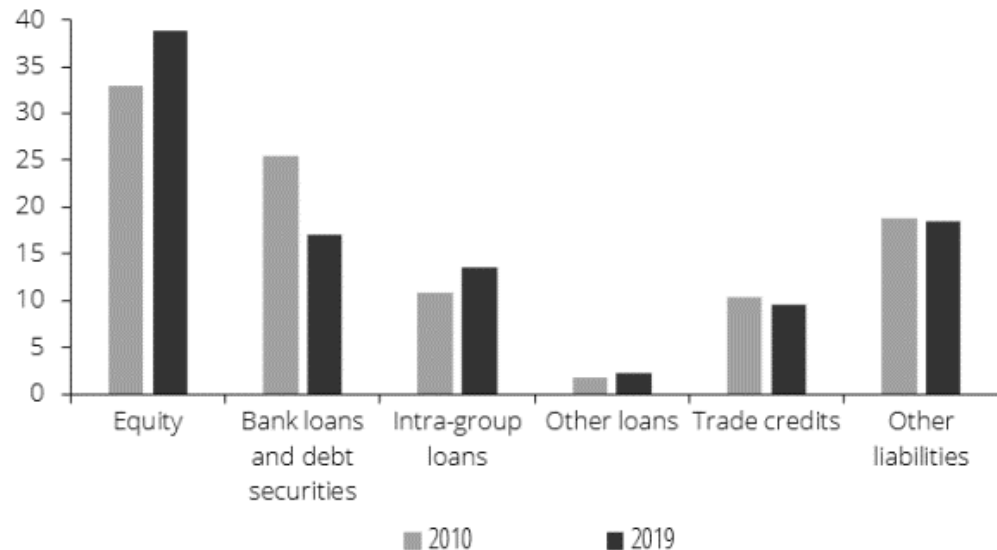
Results

**4.**

Final Remarks

# Motivation

Chart 1. NFC funding structure | As a percentage of assets

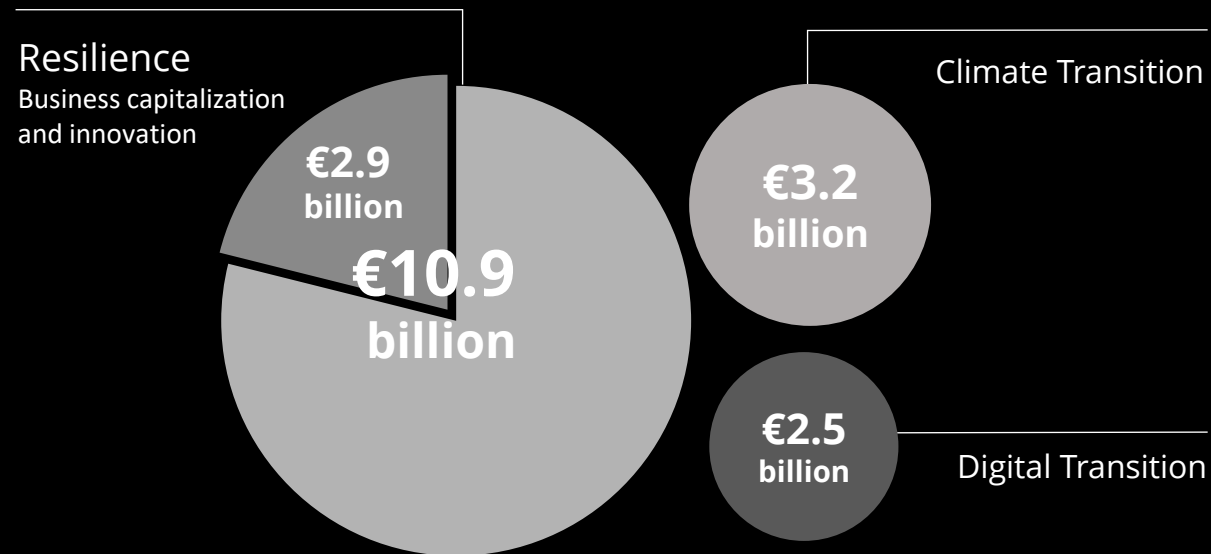


Source: Banco de Portugal (Financial Stability Report, June 2020)

“Credit-constrained firms, presented in the years after the financial crisis, a lower probability of survival and an inferior investment rate.” (Félix, 2018)

“Portuguese firm reveal difficulties in growth.” (Braguinsky et al. 2011)

## Main Pillars of the Portuguese PRR:



Source: Portuguese Recovery and Resilience Plan, 2021

# Motivation

## Objectives

1. Understand which factors affect capital structure decisions;
2. Analyse how the Financial Crisis impact capital structure;
3. Explore the heterogenous effects of Financial Crisis on capital structure decisions.

## Research Questions

**RQ.1** – How did the 2008 Financial Crisis impacted firm's capital structure?

**RQ.2** – Are there heterogeneous effects?

- Sector of Activity
- Age Class;
- Internationalization;
- Leverage Level.
- Innovation Status;

## SMEs Sector in Portugal



Represent more than **+99%** of all firms.



**+50%**

They contribute more than half of all total sales turnover.

They account for more than **3/4** of all employment.



**100 SMEs per 1000 inhabitants.**

The EU-28 average is 58, Portugal ranks 3<sup>rd</sup>.

Source: European Commission, 2019; Banco de Portugal, 2019.

# Methodology and Data

## Econometric Model

$$\text{Leverage}_{it} = \alpha + \beta x'_{it} + \gamma C_t + \tau PC_t + \varepsilon_{it}$$

Fixed Effects Model:

- Introduces individual-specific term;
- Statistically verified with Hausman Test.

**Dataset** – BPlim firm's database (2006 to 2018) with economic, financial and employment information for all the Portuguese firms.

Periods Considered:

- Pre-Crisis (2006-2008);
- Crisis (2009-2014);
- Post-Crisis (2015-2018).

# Theoretical Framework

## The Relevance of Capital Structure

### Irrelevance Proposition

Firm value independent of capital structure.

### Trade-Off Theory (TOT)

- Benefits: Tax advantages related to debt financing.
- Costs: Bankruptcy costs and agency costs.

### Pecking Order Theory (POT)

- Financing Sources: Internal funds, debt, new equity.
- Asymmetric Information Costs.

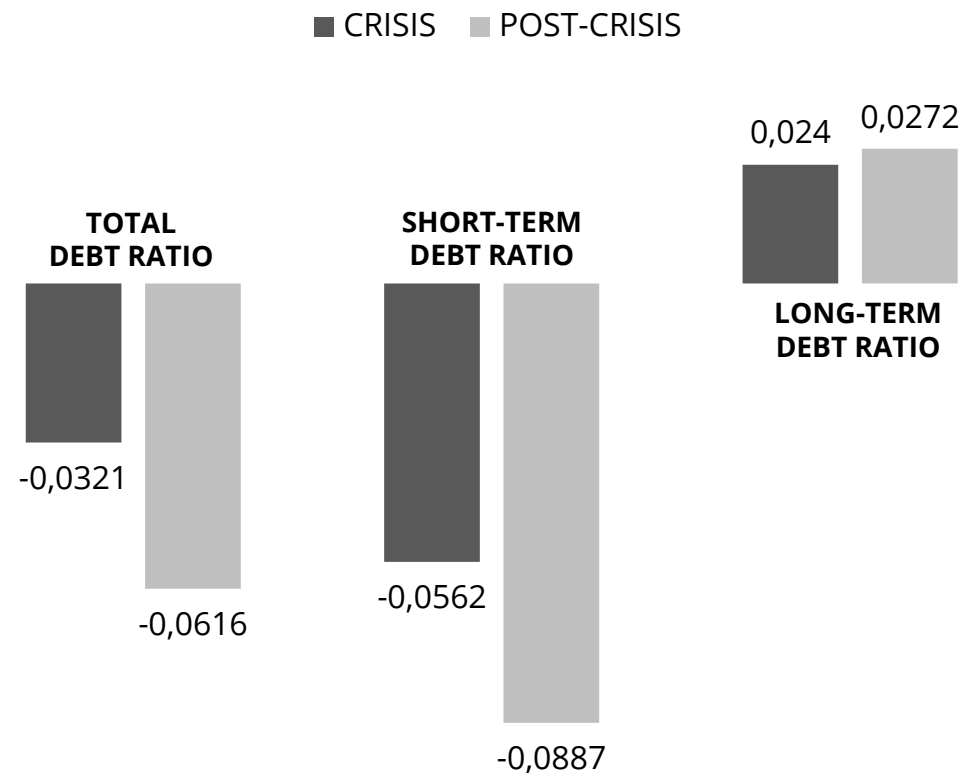
# Results

General Approach	TD/TA	STD/TA	LTD/TA
Firm Age	-	-	⊕
Firm Size	+	+	+
Asset Tangibility	+	-	+
Profitability	-	-	-
Firm Risk	⊖	-	-
Growth Opportunity	+	+	⊕
Liquidity	-	-	+
NTDS	+	+	-

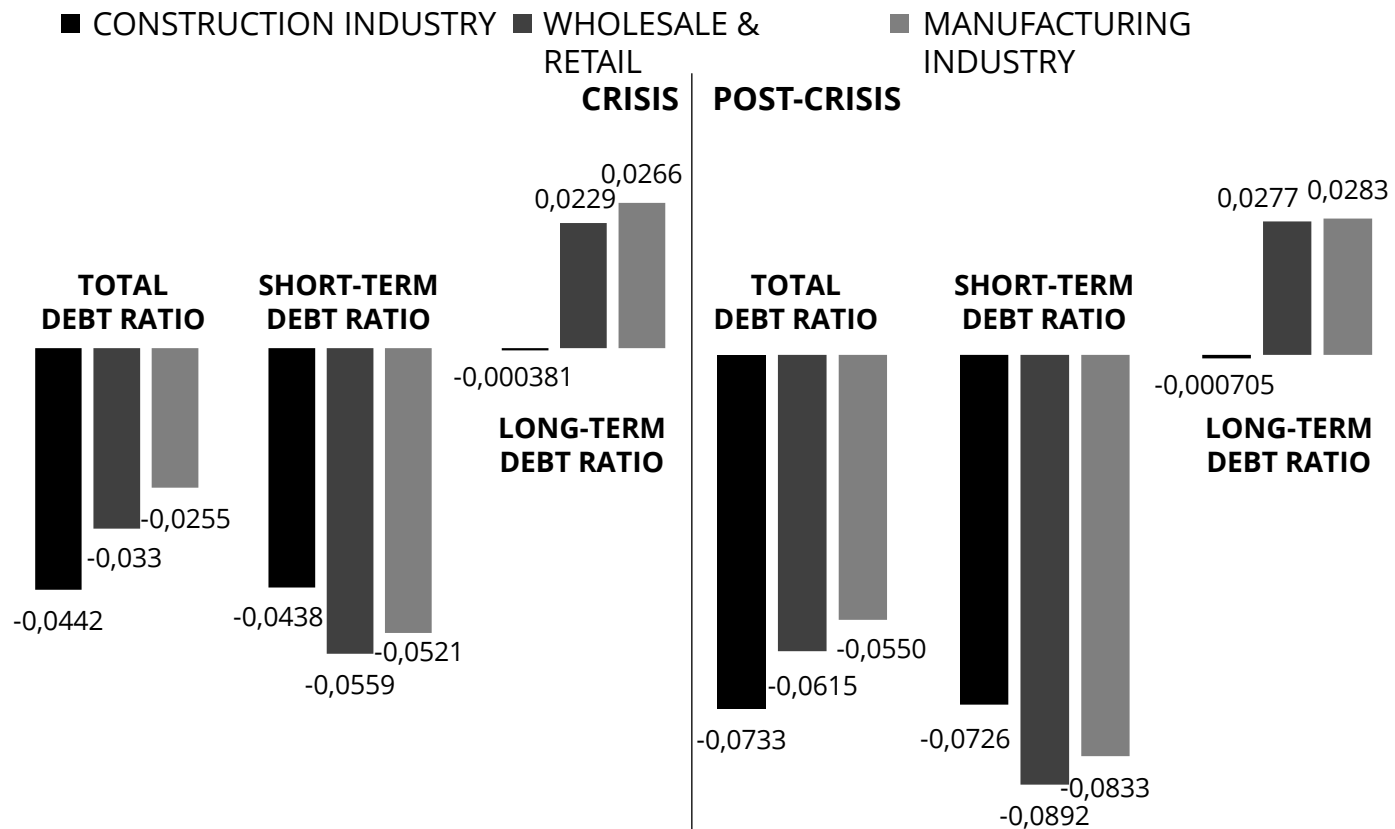
Macroeconomic States	PRE-CRISIS	CRISIS	POST CRISIS
<b>LDT/TA</b>			
Firm Age	-	⊕	-
Growth Opportunity	-	⊕	-
<b>TD/TA</b>			
Firm Risk	+	+	⊖

## MACROECONOMIC IMPACTS (VALUES OF COEFFICIENTS)



# Inter and Intra Sectoral Effects

## MACROECONOMIC IMPACTS (VALUES OF COEFFICIENT BY INDUSTRY SECTORS)



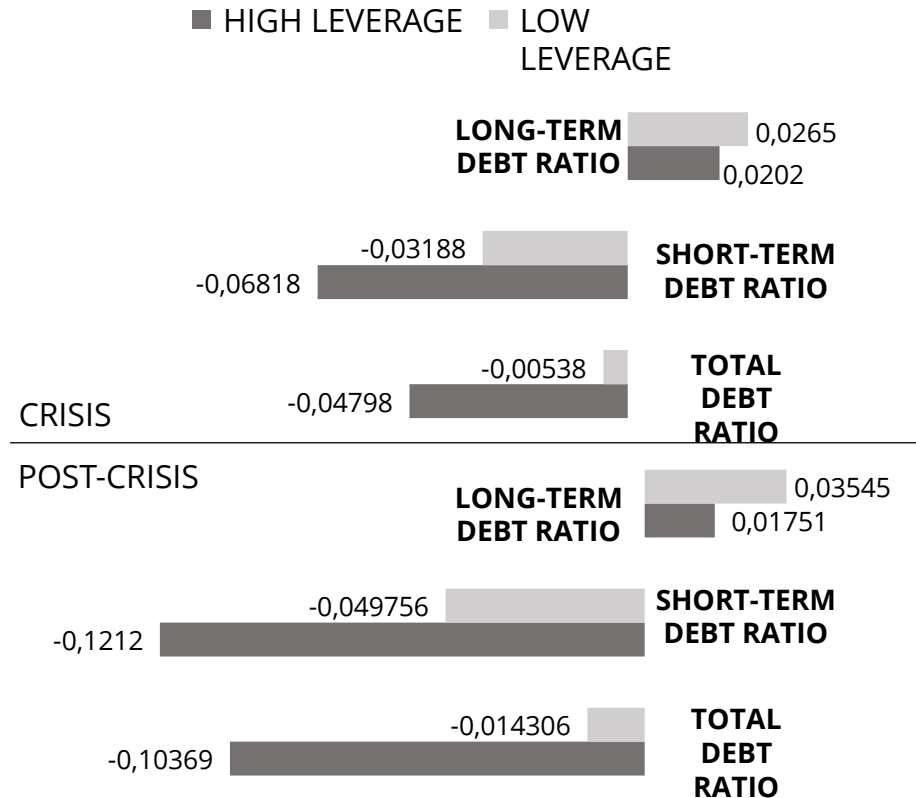
## Inter Sectoral Conclusions:

We did not find statistically significant evidence on inter-industry differences of capital structure decisions.

In a further analysis, considering the three most representative industries, the construction sector, did not presented the substitution effect of short-term debt by long-term debt in both periods.

# Inter and Intra Sectoral Effects

## MACROECONOMIC IMPACTS (VALUES OF COEFFICIENT BY LEVERAGE LEVEL)



### Intra Sectoral Conclusions:

Firms with a leverage level above the industry mean were under more pressure to reduce debt ratio, as they present larger negative coefficients in total debt and short-term debt ratios for both periods.

This result seems to point out that intra-industry effects are relevant to fully comprehend capital structure decisions.



# Internationalization and Innovation

Linear Combination Of Interaction Terms

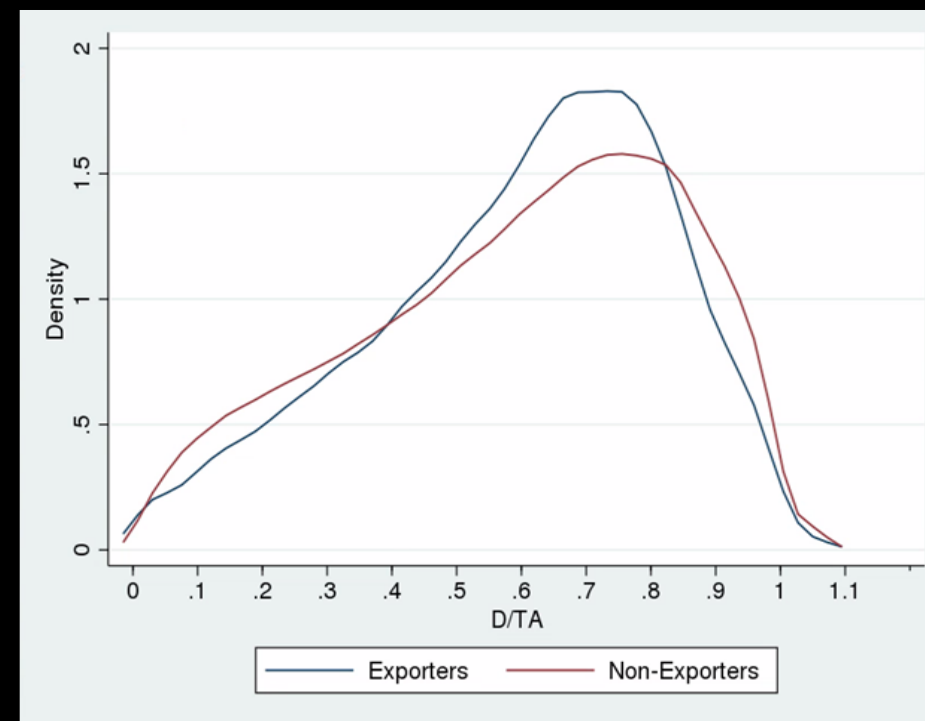
Internationalization	TD/TA	STD/TA	LTD/TA
$\beta_{export} + \beta_{crisis*export} = 0$	-0.0036***	-0.0038***	0.00019
$\beta_{export} + \beta_{postcrisis*export} = 0$	-0.0088***	0.0043**	-0.0132***

Export Status: If more than 10% of total sales comes from exports from at least two consecutive years.

Innovation	TD/TA	STD/TA	LTD/TA
$\beta_{innovation} + \beta_{crisis*innovation} = 0$	-0.0009	0.0190***	0.00019
$\beta_{innovation} + \beta_{postcrisis*innovation} = 0$	-0.0050	0.0110**	-0.0132***

Innovation Status: High and medium high technological activities according to Eurostat classification.

Kernel Density (Exporters Vs Non-exporters)



# Robustness Checks

## **The results remained consistent when:**

1. Considering only firms that did not left the market during the period under analysis;
2. Lagging independent variables one period;
3. Considering different definitions for some capital structure determinants;
4. Using quantile regressions for each dependent variable.

# Concluding Remarks

Legacy effects with a large decrease in a post-crisis period.

Pecking order theory better explains capital structure decisions.

Capital structure determinants responsive to macroeconomic conditions.

Higher indebted firms under more pressure to reduce their debt ratios.

Younger firms have more difficulties under adverse conditions.

Heterogenous effects in the capital structure decisions of international and innovative firms.

Policy Implications:  
The heterogenous patterns of adjustments of firms during different macroeconomic scenarios should be taken into account when designing policies of capitalization to support firms.

# Limitations

The proxies employed to capture each capital structure determinant may raise some discussion.

Diversification and nature of finance sources not taken into account. (Commercial Loan, bank loan, bank guarantee, shareholder loans or intra-group transactions, debt for government, trade credits, etc).

# Future Research

International comparisons to investigate country-specific factors.

Apply similar procedure to explore the similarities and differences on COVID-19 Crisis.

**Thank you for your  
attention.**

**Questions?**

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# Variables Definition

Variable	Abbreviation	Measure
<b>Dependent Variables</b>		
Total Debt	RTD	Total Liabilities /Total Assets
Long-Term Debt	RLTD	Non-current Liabilities /Total Assets
Short-Term Debt	RSTD	Current Liabilities /Total Assets
Equity Ratio	REQU	Equity/Total Assets
<b>Explanatory Variables</b>		
Firm Age	AGE	log [Year of reference – Founding] year (cleaned)
Size (Assets)	SIZE__A	Log(assets)
Size (Sales)	SIZE_S	Log (Sales)
Size (Employees)	SIZE_E	N° of Employees
Asset Structure	RFA	Fixed Assets / Total Assets
Profitability	RPROF	EBITDA / Total Assets
Growth Opportunities (Sales)	GWOPP_S	Annual Growth Rate of Sales
Growth Opportunities (Assets)	GWOPP_A	Annual Growth Rate of Assets
Firm Risk (Profitability deviation)	RISK_P	Annual profitability -Average Profitability of firm i across all period
Firm Risk (Interest Coverage Ratio)	RISK_ICR	Interest expenses / Earnings Before Interest and Taxes (EBIT)
Liquidity	RLIQ	Current Assets / Current Liabilities
NDTS	RDEP	Total Depreciation Expenses / Total Assets

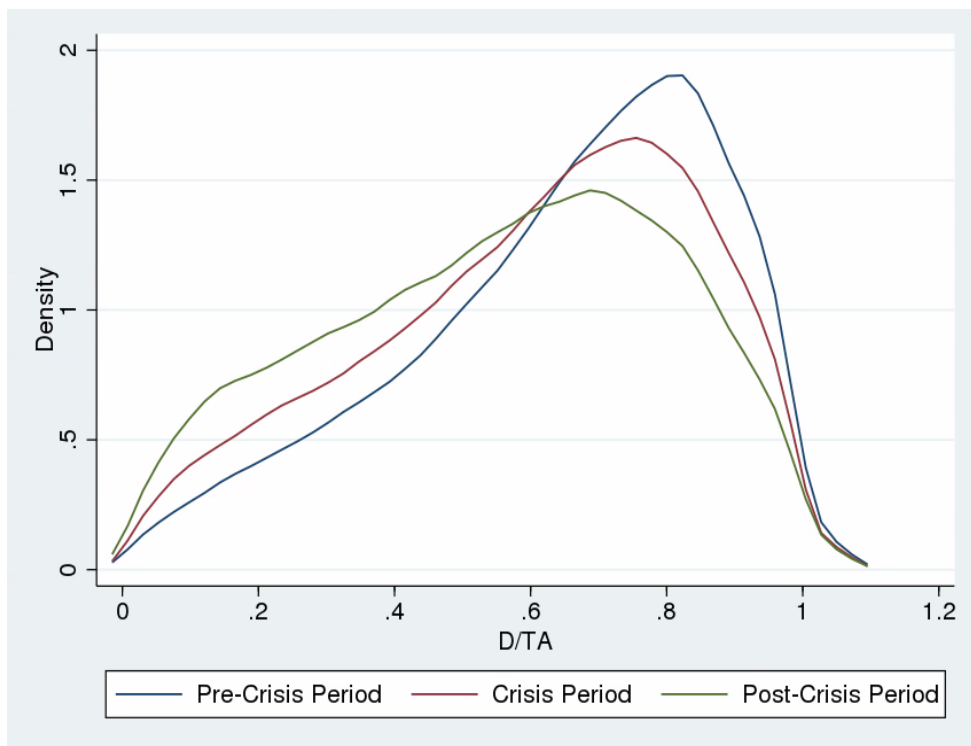
# Description Of Conditions

Summary Table: Number Of Lost Observations And Firms

Criteria	Observations	Firms
Firms with less than two observations	80,212	80,212
An average of employees below 3	3,191,179	456,834
Firms in Liquidation conditions	122,897	171,841
Firms in the financial, insurance and public administration / defence sector	2,496	84
Firms with negative equity for three or more years	387,885	42,490
Fundamental Accounting Inequalities	2,795	267
Negative Value Variables (B001, B012, B080, B081, B029, B089, D041, D002)	17,109	1,591
Inconsistent Values over time	12,552	1,384
Sales equal to zero over all period	292,490	35,597
Growth Opportunities, Profitability, and ratio of total assets Winsorization (1% and 99%)	230,919	25,927

# Descriptive Statistics

Kernel Density (Post-Crisis Period vs. Crisis Period)



Mean Debt Ratios Differences Across Periods

	Mean Pre-Crisis Period	Mean Crisis Period	Mean Post-Crisis Period	Difference (Pre vs Crisis)	Difference (Crisis vs Post)
<b>TD/TA</b>	0.64631	0.60059	0.55256	-0.0457***	-0.0480***
<b>STD/TA</b>	0.52830	0.44274	0.37644	-0.0856***	-0.0663***
<b>LTD/TA</b>	0.11801	0.15785	0.17612	0.3984***	0.0183***

Mean Debt Ratios Differences Across Sectors

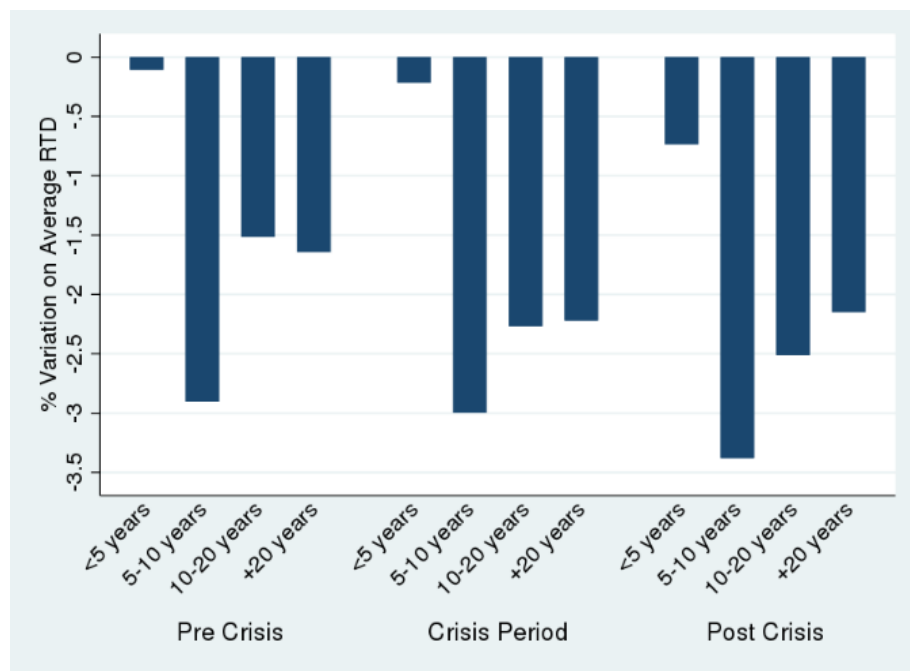
Economic Sector	Nº of Firms	%	RTD (%)	RSTD (%)	RLTD (%)
Manufacturing Industry	15,702	24.35	59.97*	44.01*	16.20*
Construction	8,332	12.92	63.85*	47.64*	13.56*
Wholesale and Retail Trade	25,955	40.26	59.72*	46.16*	15.57*
All-Sectors	64,473		59.54	44.05	15.48



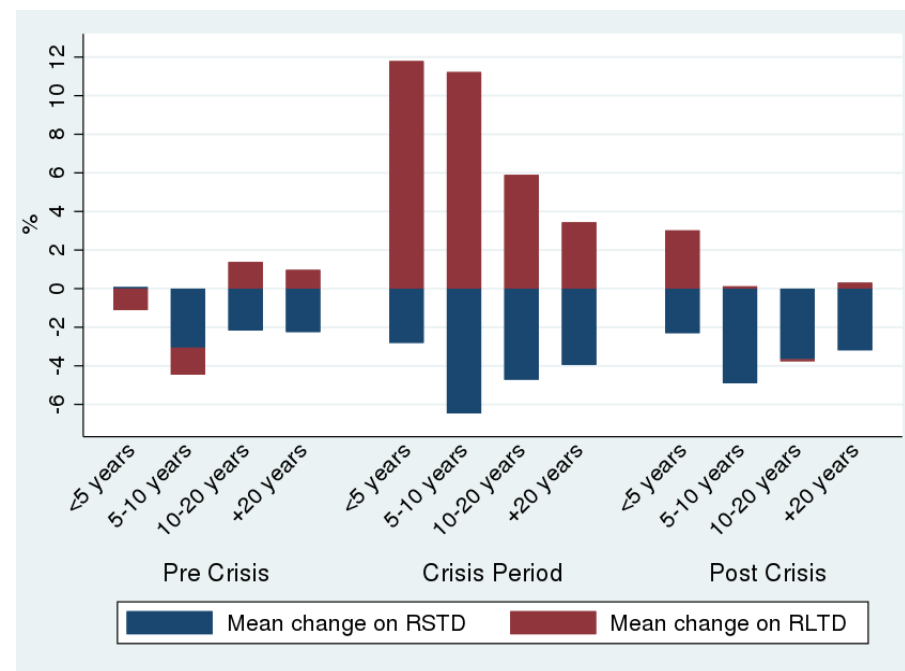
# Descriptive Statistics – Age Classes

Percentage Variation on Average Debt Ratios Across Periods and Age Classes

**Panel A:** Total Debt Variation

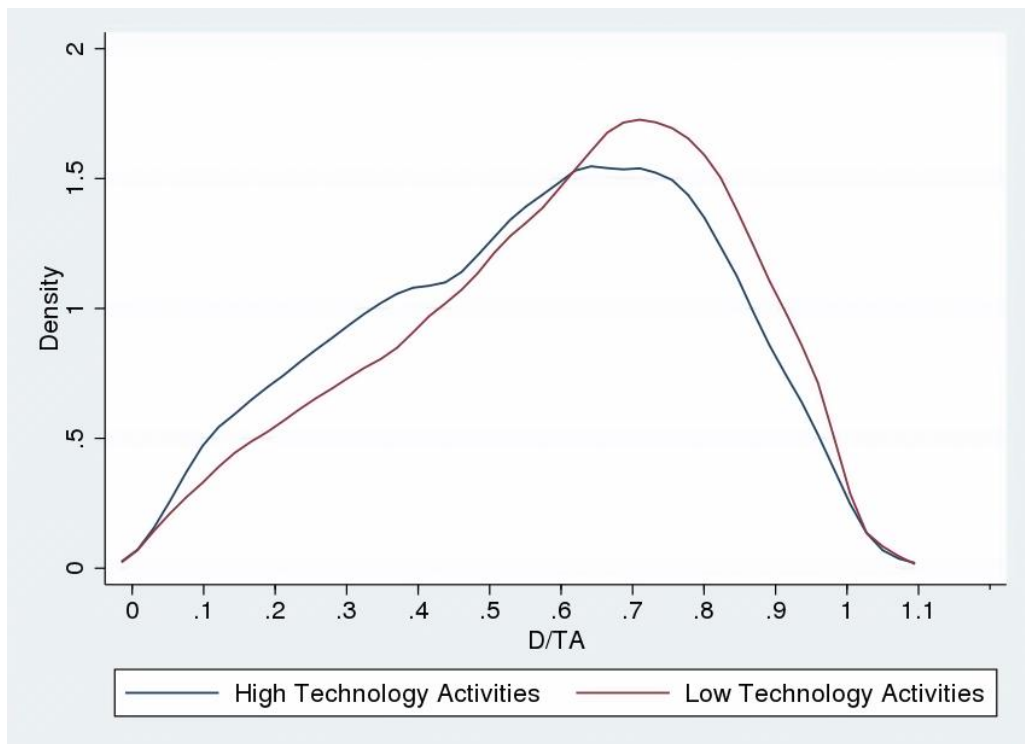


**Panel B:** Short and Long-Term Debt Variations



# Descriptive Statistics

Kernel Density (High Technology vs. Low Technology Activities)



Mean Debt Ratios Differences According To Technology Intensity

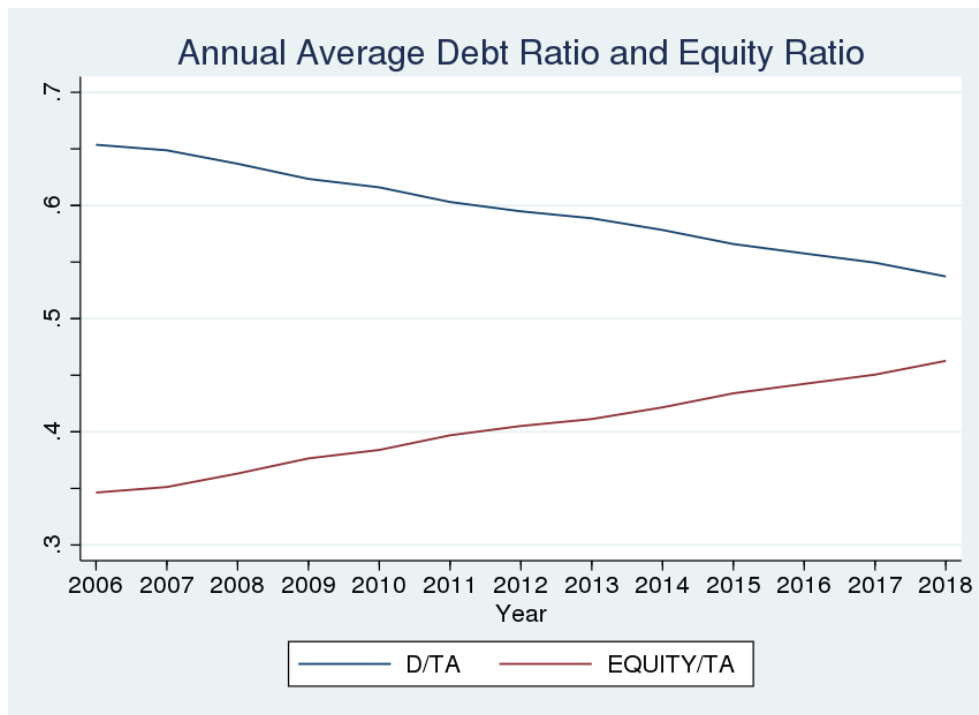
	Mean High Tech Industry	Mean Low Tech Industry	Difference	Mean High Tech Services	Mean Low Tech Services	Difference
<b>TD/TA</b>	0.5610	0.6011	0.0401** *	0.62869	0.58703	-0.042***
<b>STD/TA</b>	0.4196	0.4423	0.0227** *	0.49243	0.43835	-0.054***
<b>LTD/TA</b>	0.1414	0.1587	0.0173** *	0.13626	0.14867	0.0124** *

Mean Debt Ratios Differences According To Exporter Status

	Mean Exporters	Mean Non-Exporters	Difference
<b>TD/TA</b>	0.5975	0.5951	-0.0023***
<b>STD/TA</b>	0.4385	0.4408	0.0023
<b>LTD/TA</b>	0.1589	0.1542	-0.0047***

# Descriptive Statistics

## Annual Average TD/TA and Equity/TA



# General Approach

## Results

	(1) TD/TA	(2) STD/TA	(3) LTD/TA
Firm Age (log)	-0.0978*** (0.00143)	-0.110*** (0.00148)	0.0126*** (0.00113)
Firm Size -Assets	0.0807*** (0.00207)	0.0441*** (0.00176)	0.0366*** (0.000970)
Asset Tangibility	0.0659*** (0.00350)	-0.129*** (0.00380)	0.195*** (0.00353)
Profitability	-0.390*** (0.00344)	-0.252*** (0.00370)	-0.137*** (0.00291)
Firm Risk	-0.0345*** (0.00489)	-0.00231 (0.00524)	-0.0322*** (0.00412)
Growth Opportunity	0.00531*** (0.000258)	0.00443*** (0.000344)	0.000878** (0.000300)
Liquidity	-3.62e-09*** (1.00e-09)	-1.45e-08*** (2.52e-09)	1.09e-08*** (1.65e-09)
NDTS	0.389*** (0.0126)	0.440*** (0.0141)	-0.0517*** (0.0120)
<b>Crisis Period</b>	-0.0321*** (0.000721)	-0.0562*** (0.000878)	0.0240*** (0.000753)
<b>Post-Crisis Period</b>	-0.0616*** (0.00116)	-0.0887*** (0.00128)	0.0272*** (0.00107)
Constant	-0.193*** (0.0258)	0.225*** (0.0216)	-0.419*** (0.0120)
Year FE	No	No	No
<i>N</i>	680329	680330	680330
<i>R</i> <sup>2</sup>	0.214	0.169	0.060
<i>F</i>	2,821.2058	3,025.7252	1,191.1512

Notes: The table presents the regression results of equation (1), using total debt ratio, short-term debt, and long-term debt ratios as dependent variables. Due to heteroskedasticity identified we used robust standard errors clustered at firm level. Standard errors are reported in parentheses. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Macroeconomic States

## Regression Results for Total Debt Ratio

	Total Debt Ratio					
	Pre-crisis 1)		Crisis 2)		Post-crisis 3)	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Firm Age	-0.138***	(0.00210)	-0.114***	(0.00222)	-0.134***	(0.00372)
Firm Size	0.143***	(0.00248)	0.109***	(0.00489)	0.109***	(0.00592)
Tangibility	0.0316***	(0.00588)	0.0284***	(0.00479)	0.0616***	(0.00562)
Profitability	-0.418***	(0.00652)	-0.352***	(0.00444)	-0.352***	(0.00494)
Firm Risk	0.00931	(0.00848)	0.0317***	(0.00693)	-0.0203**	(0.00697)
Growth Opp.	-0.0016***	(0.00047)	0.00276***	(0.000329)	0.00232***	(0.000413)
Liquidity	-4.6e-08***	(7.78e-09)	-1.22e-06***	(0.0000004)	1.78e-10	(3.21e-10)
NDTS	0.372***	(0.0190)	0.377***	(0.0159)	0.300***	(0.0262)
Constant	-0.915***	(0.0313)	-0.555***	(0.0611)	-0.532***	(0.0705)
<i>N</i>	151216		311908		217206	
<i>R</i> <sup>2</sup>	0.283		0.179		0.190	
<i>F</i>	1358.05948		1184.129		978.676	

Notes: The table presents the regression results of equation (1), considering each period separately. Due to heteroskedasticity identified we used robust standard errors clustered at firm level. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Macroeconomic States

## Regression Results for STD and LTD

	Short-Term Debt Ratio			Long-Term Debt Ratio		
	Pre-crisis 1)	Crisis 2)	Post-crisis 3)	Pre-crisis 4)	Crisis 5)	Post-crisis 6)
Firm Age	-0.118*** (0.00318)	-0.150*** (0.00232)	-0.104*** (0.00332)	-0.0199*** (0.00267)	0.0365*** (0.00163)	-0.0299*** (0.00257)
Firm Size	0.102*** (0.00310)	0.0689*** (0.00410)	0.0514*** (0.00430)	0.0412*** (0.00222)	0.0396*** (0.00166)	0.0573*** (0.00273)
Tangibility	-0.139*** (0.00830)	-0.151*** (0.00565)	-0.153*** (0.00668)	0.170*** (0.00716)	0.180*** (0.00517)	0.215*** (0.00624)
Profitability	-0.326*** (0.00851)	-0.223*** (0.00518)	-0.198*** (0.00547)	-0.0919*** (0.00658)	-0.129*** (0.00412)	-0.153*** (0.00472)
Firm Risk	0.0274* (0.0111)	0.0503*** (0.00766)	0.00516 (0.00761)	-0.0181* (0.00870)	-0.0186** (0.00587)	-0.0255*** (0.00652)
Growth Opp.	0.00156* (0.000749)	0.00130** (0.000495)	0.00344*** (0.000540)	-0.00315*** (0.000647)	0.00146*** (0.000423)	-0.00112* (0.000495)
Liquidity	-5.46e-08** (2.20e-08)	-1.48e-06** (0.0000006)	-8.04e-09*** (1.93e-10)	8.65e-09 (1.45e-08)	0.00000026 (0.0000002)	8.22e-09*** (2.63e-10)
NDTS	0.392*** (0.0267)	0.365*** (0.0198)	0.221*** (0.0255)	-0.0205 (0.0215)	0.0113 (0.0164)	0.0786*** (0.0217)
Constant	-0.498*** (0.0391)	-0.0568 (0.0514)	0.0182 (0.0516)	-0.417*** (0.0281)	-0.498*** (0.0212)	-0.550*** (0.0332)
<i>N</i>	151216	311908	217206	151216	311908	217206
<i>R</i> <sup>2</sup>	0.073	0.077	0.047	0.029	0.035	0.055
<i>F</i>	431.049	828.957		156.376	471.984	

Notes: The table presents the regression results of equation (1), considering each period separately. Standard errors are reported in parentheses. Due to heteroskedasticity identified we used robust standard errors clustered at firm level. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Regression Results

## Internationalization

	Total Debt Ratio		Short-Term Debt Ratio		Long-Term Debt Ratio	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Age (log)	-0.0977***	0.00143	-0.110***	0.00148	0.0120***	0.00114
Size (Assets)	0.0809***	0.00209	0.0438***	0.00177	0.0371***	0.000977
Tangibility	0.0659***	0.00350	-0.129***	0.00380	0.195***	0.00353
Profitability	-0.390***	0.00344	-0.252***	0.00370	-0.138***	0.00291
Firm Risk	-0.0345***	0.00489	-0.00266	0.00523	-0.0318***	0.00412
Growth Opp.	0.00533***	0.000258	0.00450***	0.000344	0.000835**	0.000301
Liquidity	-3.64e-09***	1.01e-09	-1.45e-08***	2.53e-09	1.08e-08***	1.64e-09
NDTS	0.389***	0.0127	0.439***	0.0141	-0.0498***	0.0120
Crisis	-0.0324***	0.000745	-0.0571***	0.000911	0.0247***	0.000782
Post-Crisis	-0.0610***	0.00121	-0.0910***	0.00133	0.0300***	0.00112
Export	-0.00966***	0.00185	-0.0171***	0.00228	0.00742***	0.00191
Crisis#Export	0.00599***	0.00173	0.0132***	0.00222	-0.00723***	0.00189
PostCrisis#Export	0.000821	0.00245	0.0215***	0.00278	-0.0206***	0.00226
Constant	-0.196***	0.0256	0.229***	0.0217	-0.425***	0.0121
<i>N</i>	680330		680330		680330	
<i>R</i> <sup>2</sup>	0.214		0.169		0.060	

Notes: This table presents the estimation results of equation (1) for each debt ratio and introducing export variable and the respective interaction term with each period. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Regression Results

## Innovation within Manufacturing Industry

	Total Debt Ratio		Short-Term Debt Ratio		Long-Term Debt Ratio	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Age (log)	-0.0966***	0.00257	-0.1101***	0.00290	0.0135***	0.00239
Size (Assets)	0.0657***	0.00283	0.0339***	0.00264	0.0318***	0.00180
Tangibility	0.0714***	0.00697	-0.1453***	0.00728	0.217***	0.00641
Profitability	-0.411***	0.00682	-0.2651***	0.00719	-0.146***	0.00583
Firm Risk	-0.0297***	0.00881	-0.0004***	0.00974	-0.0293***	0.00803
Growth Opp.	0.00918***	0.000567	0.00791**	0.000746	0.00126*	0.000621
Liquidity	-0.00000496	0.00000339	-6.56e-06	4.98e-06	0.00000160	0.00000172
NDTS	0.372***	0.0249	0.42737***	0.02773	-0.0556*	0.0234
Innovation	0.00879	0.0102	0.02444**	0.01033	-0.0157	0.00944
Crisis	-0.0246***	0.00142	-0.0514***	0.00172	0.0269***	0.00148
Post-Crisis	-0.0534***	0.00229	-0.0829***	0.00251	0.0295***	0.00210
Crisis#Innovation	-0.00780*	0.00386	-0.0053	0.00467	-0.00245	0.00392
Post-Crisis#Innovation	-0.0138*	0.00590	-0.0024	0.00635	-0.0114*	0.00508
Constant	-0.00407	0.0351	0.3702***	0.03288	-0.374***	0.0223
<i>N</i>	168,869		168,869		168,869	
<i>R</i> <sup>2</sup>	0.201		0.163		0.068	

Notes: This table presents the estimation results of equation (1) for each debt ratio and introducing innovation variable and the respective interaction term with each period. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.



# Regression Results

## Age Classes

	Total Debt Ratio		Short-Term Debt Ratio		Long-Term Debt Ratio	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Age (log)	-0.0913***	0.00144	-0.107***	0.00162	0.0157***	0.00127
Size (Assets)	0.0793***	0.00206	0.0424***	0.00174	0.0369***	0.000973
Tangibility	0.0664***	0.00350	-0.129***	0.00379	0.195***	0.00353
Profitability	-0.393***	0.00342	-0.256***	0.00368	-0.137***	0.00291
Firm Risk	-0.0296***	0.00486	0.00338	0.00521	-0.0330***	0.00411
Growth Opp.	0.00573***	0.000258	0.00493***	0.000344	0.000798**	0.000300
Liquidity	-3.43e-09***	1.00e-09	-1.41e-08***	2.54e-09	1.07e-08***	1.66e-09
NDTS	0.358***	0.0126	0.404***	0.0140	-0.0462***	0.0120
<5 years	0.00276	0.00180	-0.00195	0.00234	0.00471*	0.00202
10-20 years	-0.0155***	0.00155	-0.0248***	0.00206	0.00924***	0.00180
+20 years	-0.0384***	0.00221	-0.0514***	0.00263	0.0130***	0.00226
Crisis	-0.0284***	0.00121	-0.0556***	0.00160	0.0272***	0.00140
Post-Crisis	-0.0391***	0.00182	-0.0596***	0.00240	0.0205***	0.00212
<5years #Crisis	0.0217***	0.00174	0.0231***	0.00231	-0.00137	0.00196
<5years# Post-Crisis	0.0171***	0.00254	0.0221***	0.00323	-0.00499	0.00282
10-20years #Crisis	-0.00516***	0.00147	0.00135	0.00193	-0.00651***	0.00169
10-20years#PostCrisis	-0.0255***	0.00204	-0.0248***	0.00264	-0.000749	0.00233
+20years #Crisis	0.00241	0.00170	0.0130***	0.00211	-0.0105***	0.00182
+20years#Post-Crisis	-0.00895***	0.00243	-0.0124***	0.00290	0.00341	0.00250
Constant	-0.180***	0.0253	0.256***	0.0216	-0.437***	0.0121
N	680330		680330		680330	
R <sup>2</sup>	0.218		0.172		0.061	

Notes: This table presents the estimation results of equation (1) for each debt ratio and introducing age classes variable and the respective interaction term with each period. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Linear Combination of Interaction Terms

## Age Classes

	Total Debt	Short-Term Debt	Long-Term Debt
$\beta_{<5years} + \beta_{crisis* <5years} = 0$	0.0244***	0.0211***	0.0033**
$\beta_{<5years} + \beta_{postcrisis* <5years} = 0$	0.0199***	0.0201***	-0.0002
$\beta_{10-20years} + \beta_{crisis*10-20years} = 0$	-0.0206***	-0.0234***	0.0027**
$\beta_{10-20years} + \beta_{postcrisis*10-20years} = 0$	-0.0410***	-0.0496***	0.0085***
$\beta_{+20years} + \beta_{crisis*+20years} = 0$	-0.0360***	-0.0384***	0.00241
$\beta_{+20years} + \beta_{postcrisis*+20years} = 0$	-0.0473***	-0.0637***	0.0163***

# Regression Results

## Leverage Level

	Total Debt Ratio		Short-Term Debt Ratio		Long-Term Debt Ratio	
	Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)
Age (log)	-0.08668*** (0.0022)	-0.10275*** (0.0017)	-0.09128*** (0.0020)	-0.12432*** (0.0021)	0.0046*** (0.0013)	0.02156*** (0.0018)
Size (Assets)	0.08653*** (0.0034)	0.06658*** (0.0020)	0.04656*** (0.0027)	0.03358*** (0.00196)	0.03997*** (0.0013)	0.03297*** (0.0014)
Tangibility	0.09736*** (0.0052)	0.03337*** (0.0042)	-0.0889*** (0.0048)	-0.16938*** (0.0056)	0.18636*** (0.0045)	0.20275*** (0.0054)
Profitability	-0.28686*** (0.0046)	-0.49699*** (0.0047)	-0.16982*** (0.0046)	-0.32922*** (0.0059)	-0.1170*** (0.0034)	-0.16777*** (0.0050)
Firm Risk	0.02492*** (0.0069)	-0.07026*** (0.0064)	0.04372*** (0.0067)	-0.02006** (0.0081)	-0.01880*** (0.0049)	-0.05029*** (0.0070)
Growth Opp.	0.00609*** (0.0003)	0.00455*** (0.0003)	0.00510*** (0.0004)	0.00394*** (0.0005)	0.00099*** (0.0003)	0.00061 (0.0004)
Liquidity	-7.65e-07*** (2.86e-07)	-2.89e-09*** (6.25e-10)	-7.55e-07 (5.72e-07)	-1.38e-08*** (2.24e-09)	-1.05e-08 (3.04e-07)	1.09e-08*** (1.67e-09)
NDTS	0.30190*** (0.0178)	0.45882*** (0.0163)	0.31678*** (0.01720)	0.53430*** (0.02153)	-0.01488 (0.0144)	-0.07548*** (0.0195)
Crisis	-0.00538*** (0.0010)	-0.04796*** (0.0009)	-0.03188*** (0.0010)	-0.06818*** (0.0013)	0.02650*** (0.0008)	0.0202*** (0.00127)
Post-Crisis	-0.01429*** (0.0015)	-0.10369*** (0.0015)	-0.49756*** (0.0015)	-0.12120*** (0.0020)	0.03545*** (0.0012)	0.01751*** (0.0018)
Constant	-0.44805*** (0.0411)	0.14935*** (0.0256)	0.28646 (0.0331)	0.50849*** (0.0247)	-0.47670*** (0.0160)	-0.35913*** (0.01856)
<i>N</i>	335352	344978	335352	344978	335352	344978
<i>R</i> <sup>2</sup>	0.34795	0.12990	0.23044	0.10415	0.04795	0.08254

Notes: This table presents the estimation results of equation (1) considering high (low) leveraged if a firm has an average leverage in pre-crisis subperiod below (above) the correspondent industry median. Standard errors are reported in parentheses. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively.

# Robustness Checks

Regression Results For Models With Lagged Independent Variables

	Total Debt Ratio	Short-Term Debt Ratio	Long-Term Debt Ratio
Age (log) <sub>(t-1)</sub>	-0.0810*** (0.00118)	-0.0911*** (0.00137)	0.0101*** (0.00115)
Size (Assets) <sub>(t-1)</sub>	0.0342*** (0.00132)	0.00882*** (0.00126)	0.0254*** (0.000906)
Tangibility <sub>(t-1)</sub>	0.0592*** (0.00318)	-0.0633*** (0.00356)	0.123*** (0.00335)
Profitability <sub>(t-1)</sub>	-0.350*** (0.00351)	-0.240*** (0.00374)	-0.110*** (0.00304)
Firm Risk <sub>(t-1)</sub>	-0.0260*** (0.00451)	-0.0227*** (0.00502)	-0.00331 (0.00427)
Growth Opp. <sub>(t-1)</sub>	0.00251*** (0.000257)	0.00181*** (0.000349)	0.000705* (0.000320)
Liquidity <sub>(t-1)</sub>	-0.000000144*** (3.30e-08)	-0.000000861*** (0.000000105)	0.000000717*** (8.00e-08)
NDTS <sub>(t-1)</sub>	0.327*** (0.0118)	0.434*** (0.0135)	-0.107*** (0.0117)
Crisis	-0.0281*** (0.000673)	-0.0546*** (0.000861)	0.0265*** (0.000750)
Post-Crisis	-0.0567*** (0.00110)	-0.0866*** (0.00125)	0.0299*** (0.00107)
Constant	0.373*** (0.0163)	0.620*** (0.0156)	-0.247*** (0.0113)
<i>N</i>	614923	614923	614923
<i>R</i> <sup>2</sup>	0.168	0.147	0.036

Notes: This table presents the regression results of equation (1), considering lagged independent variables by one year. Standard errors are reported in parentheses. Due to heteroskedasticity identified we used robust standard errors clustered at firm level. Symbols \*, \*\*, and \*\*\* denote significance at 10%, 5%, and at 1% respectively