

# CAPITAL STRUCTURES AROUND THE WORLD: ARE SMALL FIRMS DIFFERENT?



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# MOTIVATION

- The purpose: *to investigate the capital structure and debt maturity decisions of firms in developing countries.*
- Previous research studying financing patterns around the world, mainly focused on large listed firms in both developed and developing countries. (Rajan and Zingales, 1995; Demirguc-Kunt and Maksimovic, 1996, 1999; Booth et al., 2001)
- Only Beck et al. (2008) have examined the financing patterns of investments of small firms; however, their data do not allow a rigorous testing of capital structure theories.



# Objective

- Examine if financing patterns of small firms differ those of the large firms
- Assess if the relation between capital structure and term maturity choices and firm size varies across different levels of development of the economic environment



# Implications

- Applicability of capital structure theories
  - Without testing the capital structure theories outside the large listed firms that have access to stock markets it is hard to determine whether empirical regularities can be generalised to all firms.
- Policy makers in national governments.
  - Institutional development helps external financing (Demirguc-Kunt and Maksimovic, 1996, 1999; Antoniou et al., 2006, 2008).
  - Most firms in developing countries are small and not listed in any stock exchange.
- Large firms are not representative of firms in developing countries.
- SMEs characterise the corporate sector in developing countries much more accurately.
  - “...the dominant form of business organisation, accounting for over 95% and up to 99% of enterprise” (OECD 2006)



# WHY SMEs?

- Constitute 67% on average of the formal employment in the manufacturing sector and contribute up to 50% to formal GDP of the developing countries. (Ayyagari et al., 2008)
- Including informal enterprises the estimates increase up to 95% employment and 70% of GDP (Keskin et al., 2008)
- *SMEs are important for promoting economic growth, employment and poverty alleviation.*



# REVIEW OF THE LITERATURE



# CAPITAL STRUCTURE THEORIES

- Trade-off theory (Scott, 1977; Jensen et al., 1976)
  - A firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing.
- Pecking Order theory (Myers & Majluf, 1984; Ross, 1977)
  - Firms finance new investments first internally, then with low risk debt and finally if all fails with equity.
- Agency cost theory (Jensen&Meckling, 1976; Harris&Raviv, 1990; Stulz, 1990)
  - Costs are created due to conflicts of interest between shareholders, managers and debt holders.



# Predictions

- Asset tangibility
  - STO and AT predicts a positive relation
  - Maturity matching principle propose
    - positive relation with long term debt
    - negative relation with short term debt.
- Profitability
  - According to POT, negative relation
- Size
  - STO and POT propose positive relation





# Economic policy

- In most developing countries the major obstacle to external finance for small firms is the availability of it.
- When institutional development is weak other forms of informal financing
  - short term debt via supplier credits or long term debt via development banks or trade credits (Beck et al., 2008).
- Thus for less developed countries the income and growth levels and stability of the economy become important for providing external finance for small firms.



# Predictions

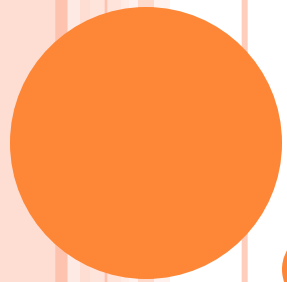
- GDP per capita
  - Income level of countries
  - Positive
- Growth rate of the economy
  - Growth opportunities available in the economy
  - Positive
- Inflation
  - Uncertainty
  - Negative
- Interest rate
  - Cost of borrowing
  - Negative
- Tax
  - Tax shields
  - Positive



# RESEARCH QUESTIONS

- Are the capital structure theories portable to small firms?
- Does economic environment have an impact on the financing decisions of firms?





**DATA**



# VARIABLES

## ○ *Dependent variables*

- Leverage
  - Total liabilities to total assets
- Long term debt
  - Long term liabilities to total assets
- Short term debt
  - Short term liabilities to total assets

## ○ *Firm-specific variables*

- Asset tangibility
  - Net fixed assets / Total assets
- Profitability
  - EBT / Total assets
- Size
  - Small
  - Large

## ○ *Macroeconomic variables*

- GDP per capita
- Growth rate of GDP
- Inflation
- Interest
- Tax



# COMPARATIVE MEANS OF DIFFERENT TYPES AND SIZES OF FIRMS

	All	Small	Medium	Large	Private	Listed	US(UK)
<b>Leverage</b>	0.3909	0.3065	0.4597	0.5048	0.3670	0.4629	0.58(0.54)
<b>Ltdebt</b>	0.1401	0.0960	0.1716	0.2141	0.1405	0.2119	0.37(0.28)
<b>Stdebt</b>	0.2494	0.2076	0.2868	0.2918	0.2247	0.2498	
<b>Tangibility</b>	0.4521	0.4817	0.4280	0.4143	0.4671	0.4337	0.395(0.356)
<b>Profitability</b>	0.3406	0.3058	0.3536	0.4460	0.3572	0.3341	0.16(0.11)
<b>Small</b>	0.4810	NA	NA	NA	0.5073	0.2594	
<b>Large</b>	0.1089	NA	NA	NA	0.0960	0.2753	
<b>GDP/Cap</b>	1698	1781	1720.8	1249.4	1743.8	1453.7	34852(25359)
<b>Growth</b>	0.0326	0.0309	0.0339	0.0356	0.0324	0.0310	0.0175(0.0240)
<b>Inflation</b>	0.0695	0.0711	0.0678	0.0687	0.0739	0.0773	0.0213(0.0241)
<b>Interest</b>	0.2127	0.2201	0.2148	0.1719	0.2230	0.1763	0.0621(0.0475)
<b>Tax</b>	0.2964	0.2895	0.2983	0.3196	0.2913	0.3015	0.35(0.30)
<b>No. of Obs</b>	27738	13343	11373	3022	23594	2135	



# METHODOLOGY

- $D_{i,t}/V_{i,t} = \alpha + \sum \beta_j F_{i,j,t} + \sum \delta_k X_{k,t} + \varepsilon_{i,t}$
- F shows firm level variables
- X shows macroeconomic variables
  
- Period fixed effects
  - “the majority of variation in leverage in panel of firms is time invariant” (Lemmon et al., 2008)





# EMPIRICAL MODEL

*Leverage = f (Asset tangibility, profitability, size, country factors)*

$$\text{Leverage}_{it} = \alpha_i + \beta_1 \text{Tangibility}_{it} + \beta_2 \text{Profitability}_{it} + \beta_{3A} \text{Small}_i + \beta_{3B} \text{Large}_i + \beta_4 \text{GDP} / \text{Cap}_t + \beta_5 \text{Growth}_t + \beta_6 \text{Inflation}_t + \beta_7 \text{Interest}_t + \beta_8 \text{Tax}_t + \varepsilon_{it}$$

$$\text{Ltdebt}_{it} = \alpha_i + \beta_1 \text{Tangibility}_{it} + \beta_2 \text{Profitability}_{it} + \beta_{3A} \text{Small}_i + \beta_{3B} \text{Large}_i + \beta_4 \text{GDP} / \text{Cap}_t + \beta_5 \text{Growth}_t + \beta_6 \text{Inflation}_t + \beta_7 \text{Interest}_t + \beta_8 \text{Tax}_t + \varepsilon_{it}$$

$$\text{Stdebt}_{it} = \alpha_i + \beta_1 \text{Tangibility}_{it} + \beta_2 \text{Profitability}_{it} + \beta_{3A} \text{Small}_i + \beta_{3B} \text{Large}_i + \beta_4 \text{GDP} / \text{Cap}_t + \beta_5 \text{Growth}_t + \beta_6 \text{Inflation}_t + \beta_7 \text{Interest}_t + \beta_8 \text{Tax}_t + \varepsilon_{it}$$

Hypothesis:

$$\beta_1 > 0, \beta_2 < 0, \beta_{3A} < 0, \beta_{3B} > 0, \beta_4 > 0, \beta_5 > 0, \beta_6 < 0, \beta_7 < 0, \beta_8 > 0$$



# EMPIRICAL FINDINGS

	Leverage	Ltdebt	Stdebt
<b>Constant</b>	0.1584*** (0.045)	0.0913*** (0.031)	-0.0535 (0.039)
<b>Tangibility</b>	-0.2031*** (0.010)	0.0427*** (0.007)	-0.2492*** (0.008)
<b>Profitability</b>	-0.0261*** (0.004)	-0.0129*** (0.003)	-0.0127*** (0.003)
<b>Small</b>	-0.1352*** (0.006)	-0.0714*** (0.004)	-0.0645*** (0.005)
<b>Large</b>	0.0597*** (0.009)	0.0443*** (0.007)	0.0193** (0.008)
<b>GDP/Cap</b>	0.0361*** (0.004)	0.0072** (0.003)	0.0398*** (0.004)
<b>Growth</b>	2.6768*** (0.234)	2.4226*** (0.160)	0.4829** (0.192)
<b>Inflation</b>	-0.1567*** (0.033)	0.0796*** (0.021)	-0.2065*** (0.030)
<b>Interest</b>	0.1164*** (0.020)	-0.1012*** (0.014)	0.2397*** (0.017)
<b>Tax</b>	0.1413*** (0.045)	-0.1626*** (0.029)	0.4011*** (0.038)
<b>Observations</b>	26415	25931	25931
<b>R<sup>2</sup></b>	0.1484	0.0885	0.1528

# ARE SMALL FIRMS DIFFERENT?

Leverage	Small	Medium	Large
<b>Constant</b>	-0.1759***	0.5184***	0.3843**
	(-0.061)	(-0.078)	(-0.169)
<b>Tangibility</b>	-0.2190***	-0.2071***	-0.1047***
	(-0.013)	(-0.017)	(-0.033)
<b>Profitability</b>	-0.0124***	-0.0478***	-0.0273**
	(-0.005)	(-0.006)	(-0.012)
<b>GDP/Cap</b>	0.0683***	-0.0096	-0.002
	(-0.006)	(-0.007)	(-0.016)
<b>Growth</b>	2.1861***	3.7980***	0.2465
	(-0.373)	(-0.36)	(-0.671)
<b>Inflation</b>	-0.2137***	-0.2063***	0.1491
	(-0.047)	(-0.055)	(-0.121)
<b>Interest</b>	0.0419	0.1625***	0.2493***
	(-0.03)	(-0.031)	(-0.071)
<b>Tax</b>	0.1856***	-0.1046	0.4333**
	(-0.058)	(-0.084)	(-0.209)
<b>Observations</b>	12625	10925	2865
<b>R<sup>2</sup></b>	0.1166	0.0818	0.0206

# IS DEBT MATURITY DIFFERENT FOR SMALL FIRMS?

Ltdebt	Small	Medium	Large
<b>Constant</b>	-0.0644*	0.4153***	0.2354*
	(-0.038)	(-0.064)	(-0.135)
<b>Tangibility</b>	0.0192**	0.0597***	0.0924***
	(-0.008)	(-0.013)	(-0.028)
<b>Profitability</b>	-0.0063**	-0.0237***	-0.0187**
	(-0.003)	(-0.005)	(-0.008)
<b>GDP/Cap</b>	0.0256***	-0.0304***	-0.0168
	(-0.004)	(-0.006)	(-0.013)
<b>Growth</b>	1.3215***	3.3478***	1.4370***
	(-0.249)	(-0.237)	(-0.512)
<b>Inflation</b>	0.0896***	0.0509	0.044
	(-0.027)	(-0.04)	(-0.104)
<b>Interest</b>	-0.1585***	-0.1077***	0.0457
	(-0.019)	(-0.022)	(-0.053)
<b>Tax</b>	-0.1320***	-0.4623***	0.0192
	(-0.034)	(-0.064)	(-0.155)
<b>Observations</b>	12329	10766	2836
<b>R<sup>2</sup></b>	0.0311	0.0902	0.0423

# IS DEBT MATURITY DIFFERENT FOR SMALL FIRMS?

Stdebt	Small	Medium	Large
<b>Constant</b>	-0.3190*** (-0.049)	0.1096 (-0.074)	0.2581* (-0.145)
<b>Tangibility</b>	-0.2456*** (-0.011)	-0.2684*** (-0.015)	-0.1988*** (-0.029)
<b>Profitability</b>	-0.0052 (-0.004)	-0.0243*** (-0.005)	-0.0097 (-0.01)
<b>GDP/Cap</b>	0.0619*** (-0.005)	0.0198*** (-0.007)	0.0051 (-0.013)
<b>Growth</b>	1.2973*** (-0.283)	0.5237* (-0.309)	-1.1957** (-0.601)
<b>Inflation</b>	-0.2535*** (-0.043)	-0.2675*** (-0.051)	0.0826 (-0.099)
<b>Interest</b>	0.2319*** (-0.025)	0.2761*** (-0.027)	0.1863*** (-0.057)
<b>Tax</b>	0.4752*** (-0.05)	0.3520*** (-0.077)	0.3013* (-0.169)
<b>Observations</b>	12329	10766	2836
<b>R<sup>2</sup></b>	0.1675	0.1225	0.0490

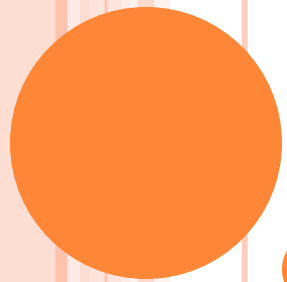
# ROBUSTNESS TEST FOR SIZE

	Leverage	Ltdebt	Stdebt
<b>Constant</b>	-0.1255*** (0.046)	-0.0239 (0.032)	-0.1955*** (0.038)
<b>Tangibility</b>	-0.2032*** (0.010)	0.0388*** (0.007)	-0.2456*** (0.008)
<b>Profitability</b>	-0.0281*** (0.004)	-0.0128*** (0.003)	-0.0149*** (0.003)
<b>Size</b>	0.0243*** (0.001)	0.0100*** (0.001)	0.0143*** (0.001)
<b>GDP/Cap</b>	0.0317*** (0.005)	0.0045 (0.003)	0.0356*** (0.004)
<b>Growth</b>	4.0565*** (0.238)	3.0590*** (0.162)	1.2040*** (0.189)
<b>Inflation</b>	-0.0594* (0.034)	0.1208*** (0.022)	-0.1533*** (0.030)
<b>Interest</b>	-0.0094 (0.022)	-0.1567*** (0.015)	0.1637*** (0.018)
<b>Tax</b>	-0.1181** (0.048)	-0.2734*** (0.032)	0.2285*** (0.040)
<b>Observations</b>	26388	25910	25910
<b>R<sup>2</sup></b>	0.1248	0.0597	0.1536

# CONCLUSION

- Firms in developing countries follow the theory.
- Size is an important factor.
- The main difference between small and large firms derives from the economic environment of the country.
- Governments in developing countries and international organisations should not ignore economic stability while focusing on institutional development.





**THANK YOU**