

# Capital Structure and Financial Performance: Evidence from Firms Operating in Emerging Markets

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## Abstract

This study investigates the relationship between capital structure and financial performance. The analysis is performed on a large cross-sectional dataset of firms operating in Africa, Middle East, Asia, Eastern Europe, Russia and China. Employing the Ordinary Least Squares technique, our findings provide evidence that capital structure matters for firm's financial performance. Leverage is negatively and significantly related to returns, and positively related to systematic risk. Overall, the findings support the static trade-off theory of capital structure; there is an optimal level of debt to equity ratio, above which the marginal benefit of financing capital with debt starts decreasing.

**Keywords:** Capital Structure, Financial Performance, Emerging Markets, Trade-Off Theory.

## Introduction

Capital structure refers to the proportion of debt and equity that the firm uses for its finance. In 1958, Modigliani and Miller described what they called capital structure irrelevance. This has been since known as Modigliani & Miller theorem, henceforth referred to as MM. They demonstrated that complete debt can be an optimal capital structure, under certain conditions. According to MM, neither capital structure nor dividend policy matter in determining the value of the firm in perfect capital markets. In addition to this seminal work by Modigliani and Miller, other scholars elaborated theories that attempt to explain capital structure in imperfect markets.

The trade-off theory of capital structure states that debt levels are chosen to balance interest tax shields against the costs of financial distress (Hillier et al., 2011). Unlike the MM theorem, the trade-off theory considers some imperfections in the markets, such as taxes.

The Pecking order, the theory pioneered by Myers (1984) in his paper "Capital structure puzzle", stipulates that firms prefer internal financing; if external finance is required, firms consider the risks in each type of financing and issue the safest security first. The safest external financing is debt, followed by hybrid securities like convertible bonds; equity is used as the last resort.

On the other hand, Baker and Wurgler (2002) propose another theory to explain capital structure: “the market timing”. According to this theory, firms strategically sell shares when they perceive that they are overvalued and later on purchase them when they are undervalued.

Given the importance of capital-financing decisions and the implications on the performance of the firm, there has been a plethora of empirical research assessing the effect of capital on the overall performance of firms.

Emerging countries have attracted attention of many scholars, mainly due to growth and investment opportunities present in those countries. China has dominated this literature; researchers trying to understand what has been happening in Chinese firms, and why they are so competitive. Chen (2004) analyses the determinants of capital structure of Chinese-listed companies, and finds evidence of a negative relationship between firm’s profitability and its level of debt.

Similarly, Huang (2006) in a different sample finds that profitability is significantly and negatively related to leverage. He concludes that though China is still in the transition from planned economy to market economy, the factors determining leverage are not different from other countries.

Analysing data of Iranian firms, Pouraghajan (2012) investigates the relationship between capital structure and financial performance; returns on assets (ROA) and returns on equity (ROE) are used as proxies of financial performance while debt ratio and other measures are included to account for capital structure. The author finds evidence that firms can improve their performance by reducing the debt ratio. In fact, as it was found in China, capital structure matters for the financial performance of the firm; leverage is negatively correlated with returns on assets.

Unlike the previous studies, the aim of this paper is to investigate to what extent capital structure matters for financial performance, by considering a large sample of firms from emerging markets. In addition, the present analysis goes beyond debt measures and looks at institutional ownership and systematic risk differences and their respective effects on financial performance of the firm.

## **Data and Methods**

### **Data**

The analysis is performed on data dated January 2014, compiled from Cap IQ & Bloomberg. The sample consists of 18,876 firms operating in emerging markets. Table1 presents the sample by regional breakdown.

Table 1

*Sample by Regional Breakdown*

	<b>Freq.</b>	<b>Percent</b>
Africa and Middle East	2,169	11.49
China	4,276	22.65
Eastern Europe & Russia	843	4.47
India	3,215	17.03
Latin America & Caribbean	765	4.05
Small Asia	7,608	40.31
<b>Total</b>	<b>18,876</b>	<b>100</b>

**Source:** Cap IQ & Bloomberg

As it can be seen in the table above, 40 percent of the firms in our analysis are from Small Asia (without China, Russia and India) followed by China, India, and Africa and Middle East. Several variables are considered in the analysis. The following table summarizes the definitions and computations of the variables.

Table 2

Variables

<b>Variable</b>		<b>Computation</b>
Dependent	Return on equity (ROE): A measure of financial performance.	Estimated by dividing the net income by the book value of equity.
Independent	Leverage: measure of capital structure	Total liabilities divided by Shareholders' equity (Debt to equity ratio).
	Institutional ownership: measure of capital structure	% of shares held by mutual funds, pension funds and trusts as a percent of total stock outstanding.
	Size	Market capitalization (in log) is used as a proxy.
	Region	Six dummies: Africa and Middle East, China, Eastern Europe and Russia, Latin America and Caribbean, India and Small Asia. China is the reference category.
	Beta: measure of systematic risk	Estimated by regressing weekly returns on stock against the local index.

The dependent variable is the return on equity (ROE). ROE is an important measure if one wants to compare companies; it represents how much profits a company has earned compared to what shareholders really own (the difference between assets and liabilities). The higher the ROE, the better the financial performance, and the easier for the company to raise money for future growth and expansion.

**Model**

This study employs the Ordinary Least Square (OLS) technique. The model is specified as:

$Y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + \varepsilon_i$  ;  $i=1,2,\dots,n$  firms and  $k=1,2,\dots,k$  independent variables.

More specifically,

$$ROE = \beta_0 + \beta_1 LEVERAGE + \beta_2 \%INSTITUTIONS + \beta_3 BETA + \beta_4 SIZE + \beta_5 Afr\&ME + \beta_6 IND + \beta_7 LA\&CARIBBEAN + \beta_8 S.ASIA + \beta_9 E.EURO + \beta_{10} R.RUSSIA$$

**Empirical Results**

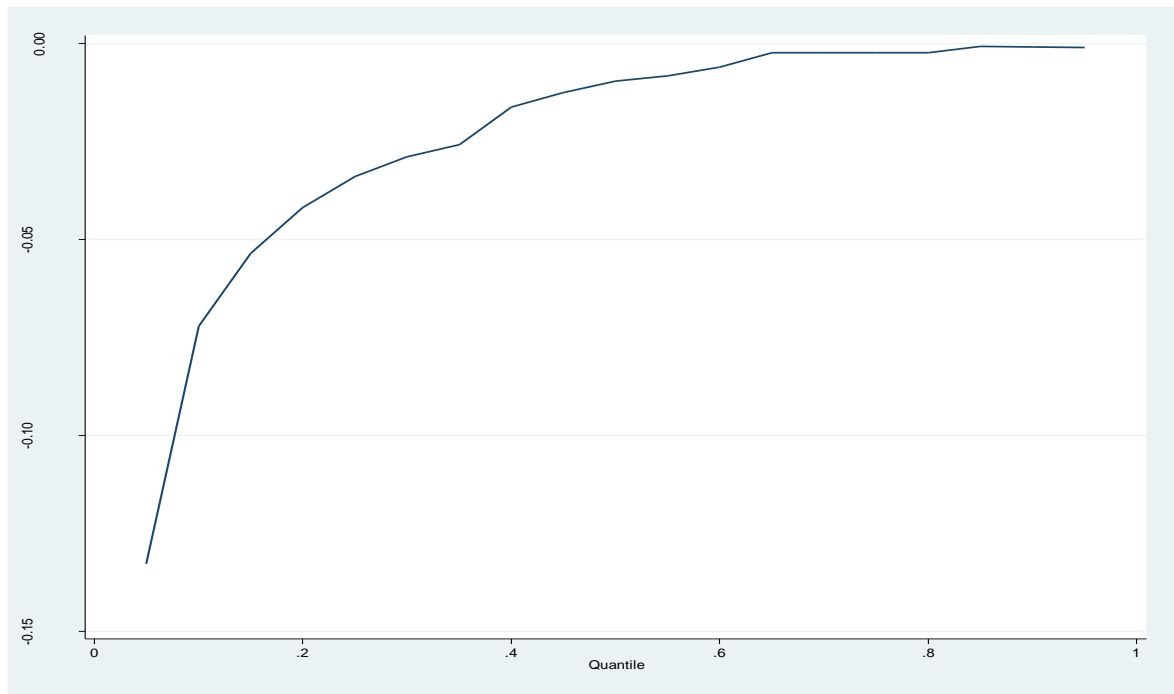
Table 3

Debt to Equity Ratio (Average by Region)

Subgroup	Mean
Africa and Middle East	0.882
China	0.805
Eastern Europe & Russia	1.078
India	1.549
Latin America & Caribbean	1.385
Small Asia	1.405

On average, Indian firms opt for more debt than equity while it is the opposite for firms in Africa and in China where equity is more than debt. In Eastern Europe and Russia, debt is almost equal to equity. The above table reveals that there are different patterns of firm financing in emerging markets; for this reason subgroup dummies are included in the regression analysis.

For further descriptive analysis, Graph 1 below depicts the effect of debt on the returns to equity by quintile.



**Graph 1: Effect of debt on Returns**

Debt to equity ratio is measured on the vertical axis against ROE in quantiles on the horizontal axis. The effect is positive in the first quintile (lower levels of debt) and increases at a

decreasing rate. The graph mirrors what is predicted by the trade-off theory; there is an optimal level of debt after which the marginal benefit of debt start decreasing.

Table 4  
*Correlation Between Variables*

	ROE	Leverage	institio~n	beta	size
ROE	1.0000				
Leverage	-0.0189*	1.0000			
	0.0266				
institutio~n	0.0023	0.0061	1.0000		
	0.8073	0.5109			
beta	-0.0550*	-0.0032	0.0356*	1.0000	
	0.0000	0.6970	0.0001		
size	0.0104*	-0.0025	0.0914*	0.0412*	1.0000
	0.2141	0.7579	0.0000	0.0000	

**Note:** \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%. Pearson Coefficients are on the first line; the second line contains p-values.

Table 4 reports Pearson correlations and their p-values. There is a negative correlation between leverage and returns on equity, though the magnitude is only almost 2%. Similarly, the measure of risk (beta) is negatively correlated to the financial performance of the firm; with a magnitude of 5.5%. However, there is no significant correlation between the level of debt and the systematic risk that firms face. For further analysis, regression coefficients are estimated using OLS. ROE is regressed on a set of independent variables: leverage, institutional ownership, the systematic risk measured by beta, the size of the firm in terms of market capitalization, and regional dummies. Results are reported in Table 5.

Table 5  
Regression Results

Dependent variable: Returns on equity (ROE)	
Leverage	-0.0122*** (-5.35)
% held by institutions	-0.0451 (-0.42)
Beta	-0.0738*** (-3.61)
Size	0.0443*** (4.64)
Africa and Middle East <sup>1</sup>	-0.0447 (-0.69)
India	0.1066 (1.52)
Latin America & Caribbean	-0.0757 (-0.95)
Small Asia	0.0457 (1.08)
Eastern Europe and Russia	-0.0301 (-0.23)
Constant	-0.0640 (-0.96)
Observations	10,833
R-squared	0.059

t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

These findings provide evidence that debt and firm's financial performance are negatively related. The coefficient on leverage is negative and significant at 1% significance level. The higher the debt to equity ratio, the lower the performance. However, the model explains only 6% of the variation in financial performance, implying that there are other variables that explain financial performance of the firm. These results are in line with what was found by Ebaid (2009) in Egypt, Pouraghajan (2012), Huang (2006) in China and Abor (2005) in Ghana. Moreover, our findings match the trade-off theory. According to this theory, there is an optimal level of debt to equity ratio, above which the marginal benefit of financing capital with debt starts decreasing due to increased financial distress as originally stated by Kraus and Litzenb (1973).

Moreover, unlike the existing literature relating firm's performance to institutional ownership (e.g. Yan and Zhang, 2009; Gompers& Metrick, 2001), these results suggest that the

<sup>1</sup> China is the reference category.

percentage of capital owned by institutions has no effect, at least in a significant way, on the financial performance of the firm.

Emerging markets attract investors due to mainly high expected returns motivated by relatively high economic growth rates. However, emerging countries are relatively less stable; this affects the volatility of stock markets, which are very much sensitive to the socio-political environment in each country. To investigate the effect of systematic risk for firms operating in emerging markets, beta has been included in the model. Indeed, the higher the systematic risk, the lower the financial performance of the firm, and the effect is significant at 1%.

Furthermore, the size of the firm as measured by market capitalization is significantly related to financial performance; large companies perform better than small ones. However, using China as the reference category, there is no significant difference in financial performance among sub-regions.

### Conclusion

The main objective of this study was to investigate the impact of debt levels on financial performance of firms operating in emerging markets. To achieve this objective, a large sample of firms operating in Africa, Middle East, Asia, Eastern Europe, Russia and China was analysed. Both descriptive and regression analyses were performed. Overall, financial leverage is found to be negatively related to financial performance. Similarly, firms with high systematic risk, as measured by beta, experience low returns. These results suggest that, unlike the pioneers of capital structure irrelevance, the level of debt matters for financial performance; there is an optimal level of debt to equity ratio, above which the marginal benefit of financing capital with debt starts decreasing.

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