

9-17-2019

Testing the Static Trade-Off Theory of Capital Structure: A Corporate Governance Perspective

Umar Butt
Zayed University

Follow this and additional works at: <https://zuscholars.zu.ac.ae/works>



Part of the [Business Commons](#)

Recommended Citation

Butt, Umar, "Testing the Static Trade-Off Theory of Capital Structure: A Corporate Governance Perspective" (2019). *All Works*. 4533.

<https://zuscholars.zu.ac.ae/works/4533>

This Article is brought to you for free and open access by ZU Scholars. It has been accepted for inclusion in All Works by an authorized administrator of ZU Scholars. For more information, please contact Yrjo.Lappalainen@zu.ac.ae, nikesh.narayanan@zu.ac.ae.

Testing the Static Trade-Off Theory of Capital Structure: A Corporate Governance Perspective

Umar Butt

College of Business, Zayed University, Dubai, UAE

Email: umar.butt@zu.ac.ae

How to cite this paper: Butt, U. (2019) Testing the Static Trade-Off Theory of Capital Structure: A Corporate Governance Perspective. *Theoretical Economics Letters*, 9, 2236-2261.
<https://doi.org/10.4236/tel.2019.97142>

Received: July 18, 2019

Accepted: September 14, 2019

Published: September 17, 2019

Copyright © 2019 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

In this paper we explore the static trade-off theory of capital structure under different governance structures. We find that good governance firms have leverage ratios that are higher (forty-seven percent) than poor governance firms per unit of profit. Evidence also suggests that while the leverage ratio for good governance firms has a narrower range and adjusts with changes in profit, the same is not true for poor governance firms. Direct test of the theory finds that good governance firms exhibit a positive relationship between profits and leverage, while poor governance firms show an inverse relationship. Further tests provide evidence for the varying use of tangible assets and size in leverage increasing activities for the two classifications of firms. The results of the paper demonstrate that the mixed results of prior studies notwithstanding, leverage is increasing in profits when controlled for agency problems, and shareholder-controlled firms exhibit the results predicted by the theory.

Keywords

Trade-Off Theory, Corporate Governance

1. Introduction

Literature on capital structure theories has been dominated by intriguing discussions on the static trade-off theory of capital structure. The theory implies that firms have an optimal debt equity ratio and actively strive to move towards this target. The optimality is based on the comprehension that firms want to take advantage of the tax deductibility of interest thereby increasing the returns to the shareholders. The benefits of the tax savings are traded-off against the cost of bankruptcy to target an optimal capital structure or else in the absence of such costs; a 99.9 percent debt ratio is desired [1]. The movement towards optimality

is triggered by the profit profile of the firm and the theory predicts that an increase in profits of the firms will lead to an increase in the leverage. The theory translates to empirical hypothesis. It predicts a positive relationship between profits and leverage and, with managers expected to maximize shareholders wealth, the theory can be tested by measuring the changes in leverage as a result of changes in the profits of the firm.

The empirical evidence of the trade-off theory is convoluted. Several empirical papers have provided anecdotal evidence of the theory by employing indirect tests of the static trade-off model. These papers have documented evidence of strong industry effects in debt ratios which they interpret as evidence of optimal ratio. Other supporting studies have evidenced a negative relationship between leverage ratios and intangible assets and have also found that firms with tax loss carryforward are less likely to issue debt. However, literature on direct empirical test of the theory has documented a statistically significant negative relationship between profits and leverage.

This paper contends that earlier direct tests of the theory did not encompass the existence of an agency problem, even though the nature of the principal-agent relationship may determine a firm's choice of capital structure. Managers may not actively seek the optimal capital structure and the evidenced negative relationship may be a subset of management inefficiency. There could be several reasons for this behaviour. First, managers can inadvertently fall into financial patterns¹ that have no material effect on the value of the firm and that such "neutral mutations" can persist indefinitely [2]. Second, managers may not want to use debt as it limits their discretion over resources [3] [4]. Third, managers do not like the discipline provided by debt as debt covenants give creditors control rights in case of violations of such covenants [5].

The fundamental goal of management is shareholders wealth maximization and tax savings have been documented as accounting for 9.7 percent [6] and 10.4 percent [7] of firm value. It therefore stands to reason that a better alignment of interests between shareholder and managers will motivate managers to accrue benefits arising from the tax deductibility of interest. This argument is further supported by evidence that better corporate governance practices reduce the cost of debt [8] [9] hence making it more attractive as a source of financing. A positive relationship between effective corporate governance and leverage has also been documented [10]. It therefore stands to reason that governance structure of a firm plays an important role in determining its choice of capital structure.

In this paper we investigate the role of corporate governance in analyzing the sources of financing used by managers and hypothesize that these governance mechanisms act as incentives to encourage managers to act in the best interests of shareholders by issuing debt when the profits of the firm increase. The goal is to employ a direct test of the static trade-off theory and identify that previous studies, which found a negative relationship between profits and financial leve-

¹The use of debt and equity as financing choices.

rage, did not take into account agency conflicts, and that the observed negative relationship is a result management inefficiency. We conclude that firms with strong corporate governance mechanisms will display the predictions of the theory and exhibit a positive relationship between profits and leverage. Conversely, firms with weak corporate governance mechanisms will exhibit a negative relationship.

Background

In Modigliani and Miller's [11] world sans any bankruptcy penalties, managers should take as much debt as they possibly can to take advantage of interest tax shield. Since then many studies have explored the relationship between the benefits of debt against the cost of bankruptcy. Kraus and Litzenberger [12] analyzed the relationship in a state preference framework and noted that the legal obligation of paying a fixed amount may force the firm into incurring bankruptcy and its associated penalties if it cannot meet its debt obligation. Leyland and Pyle [13] argued that debt is a monotonically increasing function of the equity position of the shareholders, whenever the shareholders' financial contribution exceeds 18.6 percent of the total financing of the firm. The optimal capital structure thus is a mixture of debt and equity. Following up on this several authors explored indirect tests of the existence of an optimal capital structure. Miller and Modigliani [14] provided evidence of an increase in the market value of electric utilities as result of interest tax shields. Schwartz and Aronson [15] interpreted the presence of strong industry effects in debt ratios as evidence of the existence of optimal debt ratio. Long and Malitz [16] show that leverage is negatively related to intangible assets such as R&D expenditures, and Smith's [17] synopsis shows that all leverage increasing transactions are good news.

Other studies provide evidence that firms move towards a target debt equity ratio. Auerbach [18] employs and estimated target adjustment model which allows for firm-specific and time varying targets. He interprets the significant adjustment coefficients as support for target adjustment behavior amongst firms. Jalilvand and Harris [19] estimate a partial adjustment model and find significant adjustment coefficients which they interpret as evidence of firms optimizing their debt ratios. They provide evidence of mean reversion in debt ratios and interpret it as firms trying to adjust toward a debt target.

However, other empirical evidence is inconsistent with the predictions of the model. Numerous studies, such as Titman and Wessels [4], Rajan and Zingales [20], Graham [6] and Graham and Harvey [21], have examined the determinants of target leverage and find that profitable firms have less leverage. They interpret these findings to be contradictory to the notion of the existence of an optimal capital structure. However, alternative explanation of such realization is also present. For example, personal income taxes paid by the marginal investor in corporate debt may offset the corporate tax saving since the equilibrium for supply and demand for corporate debt is at the aggregate level [2]. Later work

e.g. Fortune [22] find evidence contrary to this and report that the marginal bondholder's tax rate is significantly less than the corporate tax rate. Heider and Ljungqvist [23] study changes in leverage as a result of changes in state tax rates and find the firms increase their leverage by 40 basis points for every 1 percent increase in the tax rate. They also report that the sensitivity is greater amongst profitable firms, pointing to a positive relationship between profits and leverage.

Many papers have explored the benefits of tax savings against the cost of financial distress and have found the empirical evidence of the theory of capital structure to be inconsistent. Masulis [24] documented the negative valuation effect of equity-for-debt exchange offers and equity issues. This valuation effect was earlier proposed by Ross [25], who observed a positive relationship between profits and leverage and noted that a decline in profitability led to lower debt ratios. Literature that provided a direct test of the static trade-off theory could not find empirical support for the predicted relationship between leverage and profits. Kester [26], Titman and Wessels [4], Rajan and Zingales [20] and Shyam-Sunder and Myers [27] found strong negative relationships between debt ratios and profits and cast doubt on the validity of the trade-off theory. Myers [28], Fama and French [29] and Frank and Goyal [30] also conduct direct test of the model and note that despite the apparent attractiveness of debt, the empirical evidence is contrary to what the model predicts. These papers reject the predictions of the theory and conclude that evidence for the theory does not exist.

Earlier literature however has overlooked the importance of alignment of interest of managers and shareholders. The theory in essence only holds true if managers are acting in the best interest of the shareholders and are acting towards maximizing shareholders' wealth. In this paper we identify a gap in trade-off and governance literature and contends that managers of firms with good governance will actively adjust leverage in line with profits for the purpose of tax savings. This assertion is in line with the view that the interest of managers and shareholders should be aligned for value creation [31]. Good governance structures allow for better monitoring and shareholders can take action against financial policies to reduce their wealth [32]. Florackis and Ozkan [10] also find that institutional ownership has significant effect on the use of debt in a firm. Later research provides evidence that institutional ownership is positively related to leverage. Sun *et al.* [33] find evidence of the interest alignment theory and submit that the alignment of interests between managers and shareholders result in accruing benefits of tax savings and subsequently creation of wealth. This is further supported by Kieschnick and Moussawi [34], who find that governance features play an importance role in the firm's choice of capital structure. It is therefore logical to hypothesize that profits and leverage would be positively related for firms with good governance structures in place and vice versa.

The remainder of the paper is organized as follows. Section 2 describes the hypothesis for this study. Section 3 outlines data sources, corporate governance variables, profits and leverage, control variables and descriptive statistics. Section

4 discusses the results. Section 5 presents the study’s conclusion.

2. Problem Statement and Hypothesis

Assume that for the firm considered, P_i denotes the profits for the firm before interest and taxes in state i . It is sufficient to assume that the firm issues two claims on its assets—debt and equity. Debt is a promise to pay a fixed amount of interest, “ I ”, irrespective of the ability and capacity to do so. The ability of the firm to honor the promised interest payment and hence the market price of this promised payment depends on the size of I to P_i . If a state occurs such that $I > P_i$, the firm is considered insolvent. The firm therefore enters bankruptcy and incurs the associated costs (bankruptcy costs). Any remaining earning, after payment of the costs of insolvency, are distributed to debtholders. Let H_j be the amount received by debtholders and S_i the cost of bankruptcy. Then it follows that

$$H_i = \begin{cases} I & \text{if } I \leq P_i \\ P_i - S_i & \text{if } I > P_i \end{cases} \quad (a)$$

Equation (a) indicates that the amount paid to debtholders is actually smaller than promised if the firm is insolvent. The market value of debt therefore depends on the amount of money the company will pay to its bondholders. The market value of firm’s debt, V_D , can thus be expressed as follows:

$$V_D = \sum_{i=1}^n H_i = \begin{cases} I & \text{for } 0 \leq I \leq P_1 \\ \sum_{i=1}^{k-1} (P_i - S_i) + I & \text{for } P_{k-1} < I \leq P_k \quad (k = 2, \dots, n) \\ \sum_{i=1}^n (P_i - S_i) & \text{for } I > P_n \end{cases} \quad (b)$$

The description of equity securities in this case is more complex. The interest payment is tax deductible and “ T_i ” is the non-negative tax rate applicable to the earnings after interest has been paid off. Let E_j be the amount available for stockholders. Then

$$E_j = \begin{cases} P_i(1 - T_i) + T_i I - I & \text{if } I \leq P_i \\ 0 & \text{if } I > P_i \end{cases} \quad (c)$$

where $P_i(1 - T_i)$ is the firms after tax earnings for an all equity capital structure, $T_i I$ is the tax savings because of debt financing, and I is the interest paid to debtholders. The market value of equity, V_E , can therefore be expressed as

$$V_E = \sum_{i=1}^n E_i = \begin{cases} \sum_{i=1}^n P_i(1 - T_i) + I \sum_{i=1}^n T_i - I & \text{for } I \leq P_1 \\ \sum_{i=k}^n P_i(1 - T_i) + I \sum_{i=1}^n T_i - I & \text{for } P_{k-1} < I \leq P_k \quad (k = 2, \dots, n) \\ 0 & \text{for } I > P_n \end{cases} \quad (d)$$

The total value of the firm, V_L , is the sum of the market value of debt, V_D , and the market value of equity, V_E .

$$\begin{aligned}
 V_E &= \sum_{i=1}^n (H_i + E_i) \\
 &= \begin{cases} P_i(1-T_i) + I \sum_{i=1}^n T_i & \text{for } 0 \leq I \leq P_1 \\ \sum_{i=1}^{k-1} (P_i - S_i) + \sum_{i=k}^n P_i(1-T_i) + I \sum_{i=1}^n T_i & \text{for } P_{k-1} < I \leq P_k \text{ (} k = 2, \dots, n \text{)} \\ \sum_{i=1}^n (P_i - S_i) & \text{for } I > P_n \end{cases} \quad (e)
 \end{aligned}$$

The market value of unlevered firm, V_U , is

$$V_U = \sum_{i=1}^n P_i(1-T_i) \quad (f)$$

Substituting Equation (f) in Equation (e) yields the market value of the levered firm into its components of the value of the unlevered firm and cost and benefits of debt financing.

$$\begin{aligned}
 V_L = V_U + \begin{cases} I \sum_{i=1}^n T_i & \text{for } 0 \leq I \leq P_1 \\ \sum_{i=1}^{k-1} (P_i T_i - S_i) + I \sum_{i=k}^n T_i & \text{for } P_{k-1} < I \leq P_k \text{ (} k = 2, \dots, n \text{)} \\ \sum_{i=1}^n (P_i T_i - S_i) & \text{for } I > P_n \end{cases} \quad (g)
 \end{aligned}$$

Equation (g) shows that the value of the firm is composed of the value of the unlevered firm and the interplay of interest tax shield and bankruptcy cost. The ultimate objective of financial management is maximizing shareholders' wealth ($Max. V_L$) and therefore managers should increase the debt of the firm till the marginal benefits of debt are equal to the marginal cost of bankruptcy. As the profits of the firm increase, the capacity to increase the tax savings because of debt financing ($T_i I$) increases and subsequently the cost of bankruptcy (S_i) decreases. Managers in this case should take more debt as profits increase.

In the absence of agency costs, managers will strive to achieve this objective and move the firm towards its optimal debt ratio. However, managers do not enjoy the discipline imposed by debt as noted by earlier literature [4] [35]. Therefore, $Max. V_L$ is a function of the alignment of interests between managers and shareholders. In this paper, we contend that $Max. (V_L) = f(G)$, where G is effective governance mechanisms needed to align the interests of the shareholders and managers.

In light of this theoretical understanding, we contend that earlier literature has often given an incomplete and inconsistent empirical account of the static trade-off theory. It has overlooked the possibility that managers might not be acting in the best interests of shareholders and, without appropriate governance mechanisms in place, would not actively seek an optimal capital structure. In this paper, we construct and test a set of hypotheses related to the control of agency conflicts and the use of debt in the capital structure. The main hypothesis which provides a direct test of the theory is followed by two subsidiary hypo-

theses which describe the influence of corporate governance on other agency costs that may limit the use of debt.

2.1. Governance Hypothesis

Earlier literature [3] [35]² find that managers do not want to commit to fixed payments or limit their discretion over resources and, hence are not disposed to use debt in the capital structure of the firm. This conflicts with shareholders' wealth maximization objective who would want to increase debt to take advantage of the interest tax shield when profits increase. Good governance firms in this case should exhibit a positive relationship between profitability and leverage; a result that would attest to the validity of the static trade-off theory. Firms with poor governance are expected to display an inverse relationship between financial leverage and profits because of two reasons. First, the result would be in line with the earlier studies that found an inverse relationship between leverage and profits. Second, it would attest to the fact that managers of poor governance firms do not actively seek avenues to maximize shareholders' wealth but are only reactive to events, such as decline in profits. They therefore do not issue debt to take advantage of interest tax shield when profits go up but would issue debt, to save taxes and mitigate the decline in earnings, when profits decrease. This would suggest that the governance mechanism plays an important role in determining the choice of financing tool used by management and that this choice is an indication of management efficiency.

2.2. Subsidiary Hypotheses

We propose two augmenting hypotheses that would support the notion that good governance mechanisms mitigate agency costs. These hypotheses are not constructed to test the validity of theory but to examine the use of collateralizable assets and size of the firm by managers in good and poor governance firms to increase debt. They are included for two reasons. First, the availability of collateralizable assets and the relative size of the firm make it easier for the managers to acquire debt financing. Second, earlier research [30] [36] found opposing slopes for the coefficients for collateralizable assets and size. Binsebergen *et al.* [7] also concluded that the influence of size varies in different settings and samples. We propose that these conflicting results are an outcome of the governance environments in which firms operate and construct the following two hypotheses.

2.2.1. Tangibility Hypothesis

Titman and Wessels [4] noted that tangibility proxies for the ability of the firm

²The following observations have been made in prior literature 1) Donaldson [3] remarks that stockholders are expected to push for more debt and for a more continuous use of debt than management prefers 2) Myers [28] note that managers avoid high debt ratios in an attempt to protect their jobs and stabilize their personal wealth 3) Titman and Wessels [4] observe that managers of highly levered firms will be less able to consume excessive perquisites since bondholders (or bankers) are inclined to closely monitor such firms.

to borrow more money using physical assets. We would expect the managers of good governance firms to borrow more money if more collateralizable assets are available to the firm, while we do not expect the managers of poor governance firms to issue more debt. It is expected that the relationship between leverage and collateralizable assets for good governance firms would be positive while the same would not be true for firms in the poor governance portfolio.

2.2.2. Empire Building Hypothesis

The relative size of the firm is important in determining the strength of the firm to borrow money. Self-interested managers create empires to hide agency costs such as the loss of tax savings [37] [38]³. This however would not be the case for firms in the good governance portfolio and we consequently hypothesize that good governance firms will exhibit a positive relationship between leverage and size. This relationship is expected to be negative for firms in the poor governance portfolio as managers would not actively use size to increase debt.

The implications of the governance hypothesis are as follows: It would extend the existing literature by identifying corporate governance as an integral part of management's choice of financing instrument and in doing so validate the static trade-off theory of capital structure. The tangibility and empire building hypotheses lend support to the claims made in the governance hypothesis and would confirm that good governance reduces agency costs by making use of available resources to issue more debt.

3. Data Description

3.1. Data Sources

The study utilizes two databases: The Risk Metrics database and The Compustat Industrial Annual database. The Risk Metrics database provides annual data for the years 1990, 1993, 1995, 1998, 2000, 2002, 2004 and 2006 on corporate antitakeover provisions. The data also includes the G-index, developed by Gompers *et al.* [39], used to measure the balance of power between shareholders and managers. For the years in between the Risk Metrics surveys we assume that the G-Index value is the same as the prior year in line with earlier studies by Cremers and Nair [8] and Bebchuk *et al.* [40]. The G-Index does vary over time (approximately thirteen percent of the firms have a change in their G-Index), but it rarely changes dramatically (approximately three percent of the firms have a change of two or more in their G-Index value over the time period studied).

Finally, the study follows Gompers *et al.* [39] in that it focuses on the extremes, the first and tenth deciles as outlined by them. The data confirm that firms in the good governance portfolio do not move to the poor governance portfolio during the period under study and vice versa.

The Compustat database is used to collect firm-specific financial information

³The following observations have been made in prior literature 1) Zwiebel [37] suggests that the entrenchment of empire building managers is difficult to dislodge. 2) Morellec [38] argues that empire-building induce managers to issue less debt than optimal.

such as tangibility, total assets, sales, market value of equity and long-term debt. These data will be used later to define the firm-specific control variables, which are an important part of this study. The data have been winsorized at the 0.5 percent and 99.5 percent level to deal with outliers.

The corporate governance index, often referred to as the G-Index, studies the impact of balance of power between shareholders and managers. It is essentially an aggregation of antitakeover governance rules for a total of twenty-four possible provisions. These provisions are principally designed to slow down a hostile bidder, insure officers and directors against liability, refer to shareholders rights in elections, state specific anti-takeover protections for firms and other anti-takeover provisions. The index uses a point scale, ranging from one to twenty four, which adds one point for every provision that increases managerial power and consequently restricts shareholder rights. Accordingly, firms with the highest index value have the lowest (greatest) shareholder (management) power and firms with the lowest index value have the greatest (lowest) shareholder (management) power⁴.

This study segregates the data into good and poor governance firm portfolios based on the G-Index to identify the direction of the relationship between profits and financial leverage in distinctly different governance environments. For this purpose we define financial leverage (LEV) as the ratio of the book value of long term debt to the market value of the assets of the firm ($\frac{LTD}{MVA}$) and measure profits (PRFT) as the ratio of net income to the market value of the firm ($\frac{NI}{MVA}$)⁵. To test for the subsidiary hypotheses, we use a measure of the tangible collateralizable assets (COL) of the firm and the size (SIZE) of the firm measured by total assets. COL and SIZE form the basis of the tangibility and empire building hypotheses respectively and are used to explain the slope of the leverage ratio for good and poor governance firms. COL is computed as the ratio of property, plant and equipment to the market value of the firm ($\frac{PPE}{MVA}$). SIZE is measured as the log of total assets.

3.2. Control Variables

To test for the hypotheses developed in this study, we identify a number of control variables that affect capital structure. The variables are firm-specific controls motivated by Opler *et al.* [41] and Frank and Goyal [30]. These include log of total sales (LTS), market-to-book ratio (MTB), capital expenditure (CAPEX), intangible assets (INTANG), cash flow (CF), risk of cash flows (RISK), net working capital (NWC) and industry median leverage (MED). All control variables are standardized (*i.e.*, they have zero mean and one standard deviation) so that the respective coefficients have a one standard deviation interpretation.

⁴For a complete description of the construction of the G-Index see Gomper, Ishii and Metrick (2003)

⁵The market value of the firm (MVA) equals the book value of debt plus the market value of equity. See **Appendix 1** for a complete description of the variables.

LTS is measured as the log of sales. MTB is measured as the ratio of the market value of assets to the book value of assets ($\frac{MVA}{BVA}$), where the market value of assets (MVA) equals the book value of total debt plus the market value of equity. CAPEX is measured as the ratio of capital expenditure to total assets ($\frac{CAPX}{TA}$). INTANG is measured as a ratio of intangible assets to the market value of assets ($\frac{INTANG}{MVA}$). CF is computed as the ratio of earnings before interest, taxes, depreciation, and amortization to total assets ($\frac{EBITDA}{TA}$). RISK is computed using the standard deviation of cash flows for the past three years. NWC is the ratio of working capital to total assets ($\frac{NWC}{TA}$). Another important aspect of capital structure decision is that managers tend to identify and follow industry standards when setting goals and they are likely to follow the same capital structure practices as followed by their peers⁶. This could influence the analysis and consequently this study attempts to regulate for the effect of industry leverage ratios by using MED as a control variable. The reason for the normalization of these variables is to convert relatively biased descriptive numbers to meaningful ratios that can be used to conduct cross-sectional analysis. Finally, we include industry dummy variable to control for possible industry effects. Though not reported here, this paper also estimates all models using the unadjusted variables and finds similar results.

3.3. Descriptive Statistics

Table 1 provides summary statistics for the variables used in the analysis. These include the main data segregation variable (G-Index), the chief variables of my analysis (LEV, PRFT, COL and SIZE) and the control variables (LTS, MTB, CAPEX, INTANG, CF, RISK, MED, NWC). The G-Index has a mean (median) of 8.94 (9). The mean (median) G-index for the lowest and highest deciles is 4.42 (5) and 14.58 (14) respectively. A low value of the G-Index means that a firm has strong shareholder rights and a high value indicates a firm that has weak shareholder rights. LEV has a mean (median) of 0.26 (0.17) for all firms. The mean (median) LEV for the lowest and highest deciles is 0.23 (0.15) and 0.26 (0.22) respectively. This indicates that good governance firms have comparatively lower leverage ratios. The mean (median) PRFT of the entire sample is 0.084 (0.04). The mean (median) PRFT of the good governance firm is 0.03 (0.035) and the mean (median) PRFT for firms in the poor governance portfolio is 0.05 (0.041). The difference in profits is significant at the 1% level. Good governance firms exhibit lower profits compared to poor governance firms (in line with earlier

⁶The following observations have been made in earlier literature 1) Scott [42] states that if the financing decision is critical with respect to the valuation of the firm, then decision makers in various industry groups will have recognized this fact and will develop financial structures suited to their particular business risk. 2) Scott and Martins' [43] findings indicate that industry class feature cannot be ignored as a determinant of financial structure.

Table 1. Summary statistics. This table provides the summary statistics for the sample. The data set (excluding the governance index) has been winsorized at 0.5 and 99.5 percentiles and does not include financial institutions and regulated utilities. The data set comprises 23,527 firm-year observations for 2299 firms in the All Firms category, 2528 firm-year observations in the Good Governance Firms category and 1091 firm-year observations in the Poor Governance Firms category, covering the period 1990-2009.

Variable	All Firms			Good Governance Firms (Governance Index: 1 - 5)			Poor Governance Firms (Governance Index: 14 - 18)		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
G-Index	8.9408	9	2.7193	4.4244	5	0.7936	14.5848	14	0.7810
LEV [†]	0.2569	0.1677	0.2692	0.2341	0.1475	0.2546	0.2637	0.2225	0.1981
PRFT [†]	0.084	0.0394	0.4648	0.0251	0.0346	0.2365	0.047	0.0409	0.1967
COL [†]	0.2581	0.1181	0.3541	0.2062	0.1176	0.2491	0.2521	0.1819	0.2659
SIZE [†]	2.0908	2.1103	1.1766	3.0416	2.9713	0.8002	3.4326	3.4472	0.5745
LTS [†]	1.9235	1.9471	1.1649	2.8612	2.8148	0.7344	3.3191	3.3014	0.5190
MTB [†]	2.7953	1.0915	8.8995	1.7299	1.2120	1.9943	2.9702	1.0748	9.9491
CAPEX [†]	0.0628	0.0336	0.0893	0.0508	0.0330	0.0600	0.0644	0.0331	0.0929
INTANG [†]	0.0911	0.0102	0.1782	0.1083	0.0353	0.1724	0.1786	0.0055	0.1786
CF [†]	-0.1479	0.0693	1.1863	0.1114	0.1144	0.1549	0.1238	0.1276	0.1693
RISK [†]	45.838	4.0302	184.541	99.985	19.334	289.715	34.588	2.982	161.074
MED [†]	0.2116	0.1647	0.1966	0.2161	0.1733	0.1937	0.2338	0.2009	0.1671
NWC [†]	-0.0443	0.1918	2.078	0.2679	0.2568	0.2291	0.1786	0.1729	0.1785
N	23,527			2528			1091		

[†]See **Appendix** for the definition of the variables.

studies, see e.g. Klock *et al.* [9]), lending some insight into the LEV ratio reported earlier, which was higher for poor governance firms when compared with good governance firms. For a uniform comparison the paper looks at leverage per unit of profit (LEV_N) and observes that the leverage ratios for good governance firms are approximately forty-seven percent higher than the comparable normalized financial ratios for poor governance firms⁷. COL has a mean (median) of 0.26 (0.12) for all firms, a mean (median) of 0.21 (0.12) for good governance firms and a mean (median) of 0.25 (0.18) for poor governance firms. The difference is significant at the 1% level. SIZE has a mean (median) of 2.09 (2.11) for all firms, a mean (median) of 3.04 (2.97) for good governance firms and a mean (median) 3.43 (3.45) for poor governance firms. The difference in size (SIZE) is not significant. Overall the statistics report that firms in the poor governance portfolio have a high proportion of collateralizable assets as compared

⁷The following calculations were done to compute the leverage per unit of profit (LEV_N) for good

$$\text{and poor governance firms } LEV_N_{(\text{Good Governance Firms})} = \frac{PRFT}{LEV} = \frac{0.23}{0.03} = 7.67$$

$$LEV_N_{(\text{Poor Governance Firms})} = \frac{PRFT}{LEV} = \frac{0.26}{0.05} = 5.2.$$

to firms in the good governance portfolio and are also comparatively large organizations (though size is not significantly different); both properties providing them with more borrowing capacity. The rest of the variables are controls and the respective observed statistics before standardization have been reported in **Table 1**.

Figure 1 reports two graphs. The first presents the observed leverage ratios for good and poor governance firms. The leverage ratio for good governance firms has a smaller range (between 0.24 to 0.27) than the range of leverage ratio for poor governance firms (between 0.25 to 0.32). Another notable difference is that while the leverage ratio of good governance firms tends to fluctuate around the mean, the leverage ratio for poor governance firms has steadily decreased over time. The comparison is more visible when we observe the profits of the two classification of firms. The profits of good governance firms have remained around the same range over the observable period while the profits for poor governance firms has increased steadily. This provides us with the first indirect evidence that

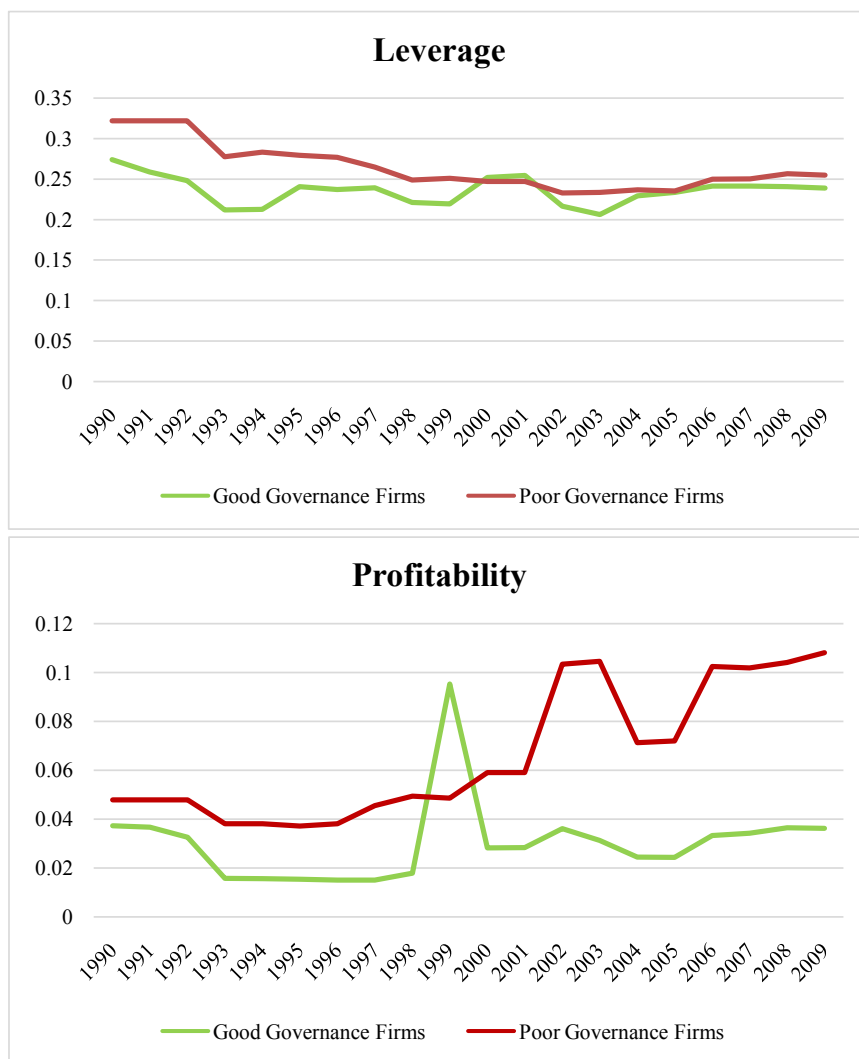


Figure 1. Comparative leverage and profitability.

governance structures are of critical importance. The leverage ratio of good governance firms indicates that firms have a target optimal debt ratio. For firms that have misaligned of managers and shareholders interest, we observe the leverage ratio decreased when profits go up. This provides support for our claim that managers do not actively work towards maximizing shareholders wealth and governance structure play an important role in determining the choice of instruments used for a firm's financing needs.

Table 2 reports the changes in its antitakeover provisions, which will lead to a change in the G-Index from one period to the other. The data are drawn from the period 1990-2009 and indicate that 5.47, 1.2 and 0.74 percent of the sample had an increase of one, two and more than two provisions in the index, respectively and 2.51, 0.33 and 0.26 percent of the firms had a decrease of one, two and more than two provisions in the index. The majority of the sample however remained unchanged with 89.49 percent of the firms having an unchanged governance index. These results suggest close to twelve percent of the firms have changed provisions from one period to the next and more companies added antitakeover provisions (7.41 percent) compared to those that removed them (3.1 percent). This indicates that more firms were wary of the takeover threat from competitors and thus acted to reduce shareholder power.

4. Leverage, Profits and G-Index

In this section we examine the empirical relationship between financial leverage and profits using various control variables. Earlier studies [29] have found a relationship that is negative and significant. This study examines the relationship in a multivariate setting using a cross-sectional time series model. The data are segregated using the G-Index, thereby creating the top and bottom decile portfolios, comprising good and poor governance firms respectively following Gompers *et al.* [39]. All regressions are performed with a lag of one except for the

Table 2. Change in governance index. This table provides the details of a change in the governance index for the data on a year to year basis. The data comprise 23,527 firm-year observations for 2299 firms covering the period 1990 to 2009. A total of 21,226 observations are included excluding the initial G-Index value.

Activity	Number of Observations	Percentage of Sample
Index increases by more than two	157	0.74%
Index increases by two	255	1.20%
Index increases by one	1161	5.47%
Unchanged	18,996	89.49%
Index decreases by one	532	2.51%
Index decreases by two	70	0.33%
Index decreases by more than two	55	0.26%
TOTAL	21,226	100.00%

industry median leverage and include industry dummy to control for industry effects. The general specification is as follows:

$$\begin{aligned} DLEV_{i,t} = & \alpha + \beta_1 \times DPRFT_{i,t-1} + \beta_2 \times DCOL_{i,t-1} + \beta_3 \times DSIZE_{i,t-1} \\ & + \beta_{4,\dots,n} \times DFirmSpecific_{i,(t,t-1)} + \varepsilon_{i,t} \end{aligned}$$

with

$$\begin{aligned} FirmSpecific_{i,(t,t-1)} = & LTS_{i,t-1}, MTB_{i,t-1}, CAPEX_{i,t-1}, INTANG_{i,t-1}, \\ & CF_{i,t-1}, RISK_{i,t-1}, MED_{i,t}, NWC_{i,t-1} \end{aligned}$$

and

$$\varepsilon_{i,t} = \text{error term} \quad (1)$$

where α is the intercept and $\beta_1, \beta_2, \beta_3$ the coefficients for PRFT, COL and SIZE respectively. Since it is important to control for other explanatory variables, which might result in changes to LEV, the model uses firm-specific regressors. These firm specific controls are modelled at time $t - 1$ except for MED which is modelled at time t , and have all been standardized as explained above.

A positive sign for β_1 for good governance firms would provide support for the governance hypothesis. It will validate the prediction of the theory of a positive change in the debt ratio as profits increase under good governance structure. Further support for this would be provided by positive signs for β_2 and β_3 . Collateralizable assets and size have displayed varying relationship with financial leverage in previous studies. Frank and Goyal [30] found that after segregating the data by decades, financial leverage had a mixed relationship with collateralizable assets while it has a positive relation with size. Faulkender and Petersen [36] and Binsbergen *et al.* [7] found that financial leverage has a negative relation with size. The differing collateralizable assets and size implication documented in various capital structure papers imply that the influence of size and collateralizable assets on the financial leverage of the firm varies in different settings and samples. For good governance firms we would expect a positive coefficient since managers are expected to take advantage of these tangible assets to borrow, thereby saving more taxes.

However, alternative explanations of these results exist. This study acknowledges that governance is not exogenous and one reason for potentially biased estimators is the endogeneity of corporate governance. For example, it could be that a third factor could drive both the governance environment and the relationship between financial leverage and profits (missing variables bias). To control for this endogenous feedback, we use instrumental variables (IVs) and perform tests for these alternative rationalizations and control the missing variable bias effect. Earlier literature has identified three IVs for governance. First, Hermalin and Weisbach [44], Listokin [45] and Coles *et al.* [46] use the old governance choices of a firm as an instrument for its current governance choices. Second, John and Knyazeva [47] content that each industry has a distinct industry structure and that the industry median of the governance variable is an exogenous and hence valid instrumental variable. Third, Dittmar and Mahrt-Smith

[48] use the initial value of the governance variable as the instrumental variable. The initial value is evidently exogenous since governance changes gradually over time and it is rational to assume that firms that start with poor governance will make little changes, compared to other firms, that leads to a significantly improved governance structure. The two properties of their argument are relevant to the G-Index, since it evolves slowly over time and there are no firms that jump from a democratic to dictatorship portfolio in the data.

The general specification of the model remains the same as in Equation (1), however the specification for firm specific variables would be as follows:

$$\text{FirmSpecific}_{i,(t,t-1)} = \text{LTS}_{i,t-1}, \text{MTB}_{i,t-1}, \text{CAPEX}_{i,t-1}, \text{INTANG}_{i,t-1}, \text{CF}_{i,t-1}, \text{RISK}_{i,t-1}, \text{MED}_{i,t}, \text{NWC}_{i,t-1}, \text{G-Index}(\text{IG}_{1-3}) \quad (1-1)$$

where IG_{1-3} are the three IVs for governance⁸. A comparison of the coefficients for the OLS and IV regressions can also establish if the IVs were able to capture firm-specific heterogeneity.

The remaining are firm specific standardized controls and the expected relationship with financial leverage has been discussed in Table 3. The results are generally consistent with prior studies.

Table 3. This table presents the expected relationship of change in control variables (Δ Firm Specific) with changes in leverage (Δ LEV).

	Unseg	Good Governance	Poor Governance	
Variables	Expected	Expected	Expected	Explanation for Expected Results
LTS	Positive	?	?	Consistent with Frank and Goyal (2009) [30] we expect a positive relationship to hold for Unseg data. The relationship is unclear for good and poor governance firms.
MTB	Negative	Negative	Negative	MTB represents the growth opportunities available to the firm and the covenants placed by debt makes borrowing more costly for high growth firm. A negative relationship is expected for all three sets of data.
CAPEX	Positive	?	?	Consistent with Frank and Goyal (2003) [49] CAPEX is expected to be positively related with financial leverage for the Unseg data. The relationship for good and poor governance firms is ambiguous.
INTANG	Positive	Positive	Positive	Intangibility is expected to have a positive relationship with financial leverage for all three sets of data as observed in earlier studies.
CF	Positive	?	?	Cash flows are expected to be positively related to financial leverage for the Unseg data but given the expected results for profits, the anticipation for good and poor governance firms is ambiguous.
RISK	Negative	Negative	Negative	Volatility of cash flows is expected to be negatively related to financial leverage for the three sets of data as cash flow uncertainty acts as a hurdle in borrowing money.
MED	Positive	Positive	Positive	Managers follow industry standard in setting up leverage ratios and industry median leverage is expected to be positively related to financial leverage.
NWC	Negative	Negative	Negative	Net working capital is expected to be negatively related to financial leverage as it represents short term liquidity of the firm.

⁸The instruments were tested for validity using the Sargan test. It tests the null hypothesis that the instruments are valid. The test yielded a p -value of 0.23 for democratic firms and p -value of 0.27 for democratic firm for the results in Table 4. The results demonstrate that the instruments are valid.

4.1. Governance Index Segregated Analysis

Table 4 provides the regression results for Equation (1) when the data are segregated between good (G-Index 1 - 5) and poor (G-Index 14 - 18) governance firms. The specifications include industry dummies. Our main variable of interest, PRFT, has a positive coefficient significant at 1% for good governance firms, and a negative coefficient for poor governance firms, significant at 1%. The coefficient for poor governance firms is negative and significant for our model. The results are in line with the governance hypothesis and suggest that managers of good governance firms increase the use of debt as profits increase, in order to capitalize on the benefits derived from tax savings. As hypothesized, we find that COL has a positive coefficient for good governance firms, significant at 1%, and a negative significant coefficient for poor governance firms. The results for good governance firms provide strong support for the tangibility hypothesis and are consistent with the argument that managers of such firms borrow more when tangible assets are available to help reduce the cost of borrowing. The results support the tangibility hypothesis for poor governance firms as well. Consistent with the empire building hypothesis, the study finds that for good (poor) governance firms, SIZE has a positive (negative) relationship with LEV. This result lends strong support to the empire building hypothesis regarding the relationship between financial leverage and the size of the firm for good governance firms. Overall, the results provide support for the main and auxiliary hypothesis of the study and provide support for the static trade-off model⁹.

Using the estimated OLS coefficients from the panel specification in **Table 4** for good governance firms, the financial leverage ratio for any firm i at time t can be computed by

$$LEV_{i,t} = \alpha + \beta_1 \times PRFT_{i,t-1} + \beta_2 \times COL_{i,t-1} + \beta_3 \times SIZE_{i,t-1} + \theta_{i,(t,t-1)},$$

with

$$\begin{aligned} \beta_1 &= 0.0341 \\ \beta_2 &= 0.132 \\ \beta_3 &= 0.0531 \end{aligned} \tag{1-2}$$

The slopes of the relationship between financial leverage and profit, collateralizable assets and size are positive, indicating that an increase in these three variables results in an increase in the use of debt by the firm. Equation (1-1) is specific to good governance firms, reports standardized control variable results and assumes that the error term $\varepsilon_{i,t}$ is zero. For an average firm in the sample the financial leverage can be estimated based on profitability, collateralizable assets and size as all the other control variables have a mean of zero.

For poor governance firms, the financial leverage ratio can be computed by

$$LEV_{i,t} = \alpha + \beta_1 \times PRFT_{i,t-1} + \beta_2 \times COL_{i,t-1} + \beta_3 \times SIZE_{i,t-1} + \theta_{i,(t,t-1)},$$

with

⁹The models were also tested on the non-standardized control variables and showed similar results.

Table 4. Leverage and profitability: regression results. This table presents the results for Equation (1) using the OLS and firm fixed effects model and Equation (1-1) for IV model. The data comprise 23,526 firm-year observations for 2299 firms covering the period 1990 to 2009. Leverage (LEV) at time t is the dependent variable and lagged (one period) profitability (PRFT), collateralizable assets (COL) and size (SIZE) are the independent variables, subject to a number of control variables. All control variables are lagged by one period except for industry median leverage (MED). The control variables have been standardized to have a mean of zero and standard deviation of one [0, 1]. The results for ordinary least squares (OLS), fixed effects (FE) and instrumental variable (IV) regressions are reported for good and poor governance firms. Robust clustered standard errors are reported in the parentheses.

	ΔLEV_t					
	1 - 5 (Good Governance Firms)			14 - 18 (Poor Governance Firms)		
	OLS	FE	IV	OLS	FE	IV
$\Delta PRFT_{t-1}$	0.0341*** (0.0050)	0.0291*** (0.0050)	0.0301*** (0.0070)	-0.076*** (0.0310)	-0.01** (0.0044)	-0.03*** (0.0080)
ΔCOL_{t-1}	0.132*** (0.0310)	0.132*** (0.0290)	0.102*** (0.0340)	-0.011*** (0.0040)	-0.003*** (0.0005)	-0.011*** (0.0050)
$\Delta SIZE_{t-1}$	0.0531* (0.0280)	0.180*** (0.0330)	0.0624** (0.0300)	-0.078*** (0.0170)	-0.035*** (0.0370)	-0.072*** (0.0170)
ΔLTS_{t-1}	-0.110*** (0.0360)	-0.111*** (0.0380)	-0.114*** (0.0380)	-0.266*** (0.0730)	-0.284*** (0.0790)	-0.307*** (0.0720)
ΔMTB_{t-1}	-5.661** (2.4400)	-1.547 (2.2750)	-3.987 (2.6330)	-16.06* (8.4600)	-16.81** (7.8820)	-19.63** (8.3940)
$\Delta CAPEX_{t-1}$	-0.159 (0.1030)	0.318*** (0.0980)	0.133 (0.1100)	0.039 (0.1830)	0.163 (0.1780)	0.009 (0.1810)
$\Delta INTANG_{t-1}$	2.389*** (0.3420)	0.775** (0.3460)	2.517*** (0.5880)	2.066*** (0.7830)	3.426*** (0.7600)	2.105*** (0.7780)
ΔCF_{t-1}	-4.226* (2.3220)	-5.821*** (1.9950)	-2.312 (2.4950)	-12.46 (9.1540)	4.519 (9.0140)	-4.317 (9.1950)
$\Delta RISK_{t-1}$	0.015 (0.0140)	-0.004 (0.0130)	0.016 (0.0140)	-0.0557** (0.0280)	-0.0323 (0.0270)	-0.0607** (0.0270)
ΔMED_t	0.126*** (0.0110)	0.0905*** (0.0090)	0.126*** (0.0120)	0.0824*** (0.0100)	0.0737*** (0.0090)	0.0802*** (0.0100)
ΔNWC_{t-1}	-26.30*** (3.2180)	-8.458*** (3.0360)	-23.92*** (3.5030)	-16.28** (6.7660)	-14.93** (6.5950)	-11.25* (6.8040)
G-Index	.	.	-0.006 (0.0090)	.	.	-0.0279*** (0.0100)
Constant	1.063	0.00626	0.818	-0.154	-0.169	0.014
Industry Dummy	Included	Included	Included	Included	Included	Included
Fixed Effects	.	Yes	.	.	Yes	.
R ²	0.661	0.231	0.623	0.717	0.289	0.729
N	1402	1402	1402	653	653	653

***p < 0.01, **p < 0.05, *p < 0.1, †See **Appendix** for the definition of the variables.

$$\begin{aligned}\beta_1 &= -0.076 \\ \beta_2 &= -0.011 \\ \beta_3 &= -0.078\end{aligned}\tag{1-3}$$

Financial leverage has a negative relationship with profits, collateralizable assets and size for poor governance firms. This indicates that as the magnitudes of these three variables increase, the relative use of debt by the firm decreases. Based on the sign and magnitude of the coefficients one might be inclined to state that the slopes of the good and poor governance firms do not intersect; however, given the relative scale of the intercepts, this cannot be stated unambiguously¹⁰. Since the coefficient of profits is statistically similar for the ordinary least squares and instrumental variable regressions, it is reasonable to assume that the control and instrumental variables capture a great share of the firm-specific heterogeneity.

4.2. Robustness Test

To check for robustness we control for the effect of poor governance firms on the interactions between financial leverage and profit by creating a dummy variable that equalled one for poor governance firms and zero otherwise (*i.e.*, the dummy variable was zero for firms with a G-Index of 1 - 13). This was done to create interaction variables (dummy multiplied by variable) for profitability (*i*_PRFT), collateralizable assets (*i*_COL) and size (*i*_SIZE), to control for feedback coming from poor governance firms. The results are reported in **Table 5**, with three specifications for each of the two different samples. The first sample (Good/Poor Governance firms) uses only firms that are in the top and bottom deciles of the G-Index. The coefficients provide robustness to the results reported in **Table 4**. The results show that the evidence for the governance hypothesis is robust to interaction and instrumental variable approaches. PRFT has positive coefficient and *i*_PRFT has negative coefficient, which are statistically significant across all specifications. The results for collateralizable assets also provide robustness to the earlier results as COL has significant positive coefficients and *i*_COL has significant negative coefficients across all specifications. The results for the empire building hypothesis are as expected, as the coefficient is positive for SIZE and negative, though insignificant, for *i*_SIZE. A possible explanation for this is that the G-Index is calculated only for large firms and the variation in size between good and poor governance firm is negligible and insignificant. This coupled with the fact that big firms are more visible to stakeholders reduces the variations in way size is treated by managers.

The second sample (All Firms) includes all the firms that are present in the data set and the G-Index range is 1 - 18. The results for this sample not only add robustness to the results reported earlier, but also give insight into the interactions of financial leverage and profits after controlling for the feedback from

¹⁰Though not reported, the data were also tested on the OLS specification with zero intercept. The profitability-financial leverage relationship for good governance firms was found not to intersect with the profitability-financial leverage relationship for poor governance firms.

Table 5. Leverage, profitability, size and tangibility: interaction variables regression. This table presents the results for Equation (1). The data comprise 23,526 firm-year observations for 2299 firms covering the period 1990 to 2009. Leverage (LEV) at time t is the dependent variable and lagged (one period) profitability (PRFT), collateralizable assets (COL) and size (SIZE) are the independent variables, subject to a number of control variables. All control variables are lagged by one period except for industry median leverage (MED). The control variables have been standardized to have a mean of zero and standard deviation of one [0, 1]. Dummy equals one for poor governance firms and zero otherwise. Robust clustered standard errors are reported in the parentheses.

	ΔLEV_t					
	Good/Poor Governance			All Firms		
	OLS	FE	IV	OLS	FE	IV
$\Delta PRFT_{t-1}$	0.0406*** (0.0050)	0.0293*** (0.0050)	0.0424*** (0.0050)	0.014*** (0.0010)	0.01*** (0.0010)	0.01*** (0.0010)
i_PRFT^\dagger	-0.0820* (0.0440)	-0.0385* (0.0250)	-0.077** (0.0400)	-0.105*** (0.0250)	-0.04** (0.0250)	-0.077** (0.0370)
ΔCOL_{t-1}	0.164*** (0.0270)	0.119*** (0.0280)	0.163*** (0.0270)	0.0249*** (0.0020)	0.00824*** (0.0020)	0.00891*** (0.0030)
i_COL^\dagger	-0.161*** (0.0290)	-0.111*** (0.0300)	-0.176*** (0.0300)	-0.0440*** (0.0120)	-0.0302** (0.0110)	-0.0677*** (0.0130)
$\Delta SIZE_{t-1}$	0.0712*** (0.0240)	0.200*** (0.0290)	0.0792*** (0.0240)	0.0475*** (0.0070)	0.111*** (0.0090)	0.0496*** (0.0070)
i_SIZE^\dagger	-0.0297 (0.0210)	-0.0235 (0.0290)	0.0046 (0.0220)	-0.00906 (0.0060)	-0.00071 (0.0040)	0.0126** (0.0060)
Dummy	-0.0891 (0.0660)	0 0.0000	0.258** (0.1090)	-0.00592 (0.0180)	-0.0036 (0.0150)	-0.00434 (0.0190)
ΔLTS_{t-1}	-0.0907*** (0.0300)	-0.149*** (0.0330)	-0.0976*** (0.0300)	-0.0302*** (0.0080)	-0.0454*** (0.0110)	-0.0234*** (0.0080)
ΔMTB_{t-1}	-6.761*** (2.1650)	-2.798 (2.1140)	-5.542** (2.1960)	-14.69*** (7.7010)	-6.460*** (6.6490)	-15.05*** (7.7230)
$\Delta CAPEX_{t-1}$	-0.245*** (0.0890)	0.265*** (0.0850)	-0.221** (0.0900)	-0.0710** (0.0300)	0.0295 (0.0290)	-0.0629** (0.0310)
$\Delta INTANG_{t-1}$	2.601*** (0.2960)	1.353*** (0.3060)	2.930*** (0.4410)	1.891*** (0.1140)	1.348*** (0.1090)	1.117*** (0.1300)
ΔCF_{t-1}	-5.846*** (2.0360)	-6.200*** (1.8680)	-5.745*** (2.0370)	-6.146*** (6.6630)	-2.302*** (6.6170)	-4.646*** (6.6900)
$\Delta RISK_{t-1}$	-0.00283 (0.0120)	-0.0137 (0.0110)	0.000634 (0.0120)	-0.0123*** (0.0020)	-0.00511** (0.0020)	-0.0158*** (0.0020)
ΔMED_t	0.109*** (0.0080)	0.0843*** (0.0070)	0.106*** (0.0080)	0.105*** (0.0030)	0.102*** (0.0020)	0.0990*** (0.0030)
ΔNWC_{t-1}	-25.32***	-11.86***	-24.30***	-2.705***	-1.542***	-3.028***

Continued

	(2.7950)	(2.6860)	(2.8580)	(0.2190)	(0.1780)	(0.2270)
G-Index	.	.	-0.009	.	.	-0.000616
	.	.	(0.0100)	.	.	(0.0010)
Constant	0.566	0.076	0.654	0.432	-0.087	0.142
Industry Dummy	Included	Included	Included	Included	Included	Included
Fixed Effect	.	Yes	.	.	Yes	.
R ²	0.641	0.232	0.642	0.478	0.215	0.447
N	2,055	2,055	2,055	15,206	15,206	15,198

***p < 0.01, **p < 0.05, *p < 0.1, [†]See **Appendix** for the definition of the variables.

poorly governed firms. The validity of the governance hypothesis is verified again as PRFT has positive coefficients and i_PRFT has negative coefficients, which are all statistically significant across all three specifications. This supports the evidence that once controlled for the feedback from poor governance firm, financial leverage and profits exhibit a positive relationship. The results for the tangibility hypothesis are robust to this estimation methodology as well since COL has positive coefficients and i_COL has negative coefficients, which are all statistically significant across all specifications. The results for the empire building hypothesis are again mixed with SIZE and i_SIZE having positive coefficients for all specifications. This suggests that the poor governance portfolio use size to their advantage to issue debt though this result cannot be stated unambiguously since the coefficients are not significant. Overall, these results provide robustness to the earlier validating results for the governance, tangibility and empire building hypotheses. One valid concern for the results in **Table 4** is that segregating the data into two distinct deciles may hide some firm specific heterogeneity. We earlier report that the OLS and IV coefficients are statistically identical, hence we can safely assume that the control and IVs are able to capture firm-specific heterogeneity. The dummy variable approach, where we do not have to segregate the data—in particular for the second sample (All Firms), provides us with similar result and provide robustness to our claim of capturing firm-specific heterogeneity.

Using the estimated OLS coefficients from the panel specification in **Table 5** for all firms, the financial leverage ratio for any firm i at time t can be computed by

$$LEV_{i,t} = \alpha + \beta_1 \times PRFT_{i,t-1} + \beta_2 \times COL_{i,t-1} + \beta_3 \times SIZE_{i,t-1} + \theta_{i,(t,t-1)},$$

with

$$\begin{aligned} \beta_1 &= 0.014 \\ \beta_2 &= 0.0249 \\ \beta_3 &= 0.0475 \end{aligned} \tag{1-4}$$

The control variables as specified earlier have been standardized. The variable

Dummy is a binary variable with value $\{0, 1\}$. While Equation (1-2) and Equation (1-3) are specific to good and poor governance firms, Equation (1-4) provides a linear approximation for the firm-specific financial leverage ratios, assumes that $\varepsilon_{i,t}$ is zero and controls for the feedback coming into the model from poor governance firms. Therefore, Equation (1-4) is true for all the firms that fall in the G-Index range of one to eighteen, can be used to estimate capital structure of the firms and attests to the validity of the static trade-off theory of capital structure.

5. Conclusions

The results of this study provide evidence on how a firm's governance structure affects its usage of debt. We started off by identifying that firms with good governance mechanisms actively adjust their debt ratio compared to firms with poor governance structures. The expectation was that managers of such firms capture openings that increase shareholders' wealth while managers of poor governance firms do not dynamically explore all avenues of wealth creation. We contend that these agency conflicts play a vital role in determining the sources of financing used by management and that earlier studies have overlooked this important aspect while testing for the static trade-off theory.

Earlier literature on the direct tests on the theory has evidenced a negative relationship between profits and leverage. Governance structure appears to have strong bearing on these tests as good governance firms would be expected to result in an increase in the value of the firm and managers would be expected to act in shareholders' interest. The analysis provides justification to these interpretations and lends support to the hypothesis that with strong governance structures in place, management will rely on more debt when profits increase, while the same would not be true of firms with inadequate governance structures. This outcome is further augmented by results that provide support for the tangibility and empire building hypotheses. Together these tests provide the first direct test of the theory and identify the importance of strong corporate governance structures as a factor motivating managers to issue increasingly more debt. Further tests using interaction variables for profitability, size and tangibility lend robustness to the findings and provide support for the three hypotheses examined in this study. The findings of the study also suggest that earlier literature on the trade-off theory of capital structure has missed an important variable (corporate governance) and that in firms with adequate governance mechanisms the trade-off theory of capital structure holds true.

The evidence provided in this paper has two implications for the body of knowledge and one policy implication. First, the alignment of interest of managers and shareholders result in maximizing shareholders' wealth. The benefits of the interest tax shields are achieved through active readjustment of the leverage ratio; however the cost of such readjustment has to be considered and is left for future research when more data is available. Second, while the managers of

poor governance firms do not act towards moving to an optimal capital structure, it is hard to decipher if this is a deliberate or inadvertent action. The outcome of our investigation also requires policy implication on part of regulators. Earlier policy changes such as the SOX act helped protect investors from fraudulent financial reporting by corporations. In light of the results of this study it seems prudent that regulations are implemented that minimizes the agency problem and protects shareholders interest. The pros and cons of such regulations have to be weighed since there is a cost associated with changing existing governance structures.

The paper also provides insight into areas of future research. Evidence for tangibility and empire building hypotheses can instigate investigation on whether firms optimally use their existing resource for value creation. Additionally, other theories of capital structure can be further research in light of the importance of governance structures. Research can also focus on weighing the cost of governance structures against the benefits accrued from implementation of such processes.

Acknowledgements

Umar Butt is an Assistant Professor at the College of Business, Zayed University, Dubai, UAE. I would also like to thank the referees of Financial Management Association (FMA) for selecting this paper in the “**Top Ten Sessions**” and the referees of Southwestern Finance Association for selecting this paper as the “**outstanding paper by a doctoral student in corporate finance**”. I would also thank Dr. Trevor Chamberlain and Dr. Joy Ishii for their valuable comments. The remaining errors are the sole responsibility of the author.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Solomon, E. (1963) Leverage and the Cost of Capital. *Journal of Finance*, **18**, 273-279. <https://doi.org/10.1111/j.1540-6261.1963.tb00723.x>
- [2] Miller, M.H. (1977) Debt and Taxes. *Journal of Finance*, **32**, 261-275. <https://doi.org/10.1111/j.1540-6261.1977.tb03267.x>
- [3] Donaldson, G. (1963) Financial Goals Management vs. Stockholders. *Harvard Business Review*, **41**, 116-129.
- [4] Titman, S. and Wessels, R. (1988) The Determinants of Capital Structure Choice. *Journal of Finance*, **43**, 1-19. <https://doi.org/10.1111/j.1540-6261.1988.tb02585.x>
- [5] Roberts, M.R. and Sufi, A. (2009) Control Rights and Capital Structure: An Empirical Investigation. *Journal of Finance*, **64**, 1657-1695. <https://doi.org/10.1111/j.1540-6261.2009.01476.x>
- [6] Graham, J.R. (2000) How Big Are the Tax Benefits of Debt. *Journal of Finance*, **55**, 1901-1941. <https://doi.org/10.1111/0022-1082.00277>

- [7] Binsebergen, J.H.V., Graham, J.R. and Yang, J. (2010) The Cost of Debt. *Journal of Finance*, **65**, 2089-2136. <https://doi.org/10.1111/j.1540-6261.2010.01611.x>
- [8] Cremers, K. and Nair, V.B. (2005) Governance Mechanisms and Equity Prices. *Journal of Finance*, **60**, 2859-2894. <https://doi.org/10.1111/j.1540-6261.2005.00819.x>
- [9] Klock, M.S., Mansi, S.A. and Maxwell, W.F. (2005) Does Corporate Governance matter to Bondholders? *Journal of Financial and Quantitative Analysis*, **40**, 693-719. <https://doi.org/10.1017/S0022109000001940>
- [10] Florackis, C. and Ozkan, A. (2009) Managerial Incentives and Corporate Leverage: Evidence from the United Kingdom. *Accounting & Finance*, **49**, 531-553. <https://doi.org/10.1111/j.1467-629X.2009.00296.x>
- [11] Modigliani, F. and Miller, M.H. (1958) The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*, **48**, 261-297.
- [12] Kraus, A. and Litzenberger, R.H. (1973) A State-Preference Model of Optimal Financial Leverage. *Journal of Finance*, **28**, 911-922. <https://doi.org/10.1111/j.1540-6261.1973.tb01415.x>
- [13] Leyland, H.E. and Pyle, D.H. (1977) Informational Asymmetries, Financial Structure, and Financial Intermediation. *Journal of Finance*, **32**, 371-387. <https://doi.org/10.1111/j.1540-6261.1977.tb03277.x>
- [14] Miller, M.H. and Modigliani, F. (1966) Some Estimates of the Cost of Capital to the Electric Utility Industry. *American Economic Review*, **57**, 333-391.
- [15] Schwartz, E. and Aronson, R. (1967) Some Surrogate Evidence in Support of the Concept of Optimal Financial Structure. *Journal of Finance*, **22**, 10-18. <https://doi.org/10.1111/j.1540-6261.1967.tb01650.x>
- [16] Long, M.S. and Malitz, E.B. (1985) Investment Patterns and Financial Leverage. In: Freidman, B., Ed., *Corporate Capital Structures in the United States*, University of Chicago Press, Chicago.
- [17] Smith, C.W. (1986) Investment Banking and the Capital Acquisition Process. *Journal of Financial Economics*, **15**, 3-29. [https://doi.org/10.1016/0304-405X\(86\)90048-6](https://doi.org/10.1016/0304-405X(86)90048-6)
- [18] Auerbach, A.S. (1985) Real Determinants of Corporate Leverage. In: Friedman, B.M., Ed., *Corporate Capital Structures in the United States (NBER)*, University of Chicago Press, Chicago, 301-322.
- [19] Jalilvand, A. and Harris, R.S. (1984) Corporate Behavior in Adjusting to Capital Structure and Dividend Targets: An Econometric Study. *Journal of Finance*, **39**, 127-145. <https://doi.org/10.1111/j.1540-6261.1984.tb03864.x>
- [20] Rajan, R. and Zingales, L. (1995) What Do We Know about Capital Structure: Some Evidence from International Data. *Journal of Finance*, **50**, 1421-1460. <https://doi.org/10.1111/j.1540-6261.1995.tb05184.x>
- [21] Graham, J.R. and Harvey, C. (2001) The Theory and Practice of Corporate Finance: Evidence from the Field. *Journal of Financial Economics*, **60**, 187-243. [https://doi.org/10.1016/S0304-405X\(01\)00044-7](https://doi.org/10.1016/S0304-405X(01)00044-7)
- [22] Fortune, P. (1988) Municipal Bond Yields Whose Tax Rates Matter. *National Tax Journal*, **41**, 219-233.
- [23] Heider, F. and Ljungqvist, A. (2015) As Certain as Debt and Taxes: Estimating the Tax Sensitivity of Leverage from State Tax Changes. *Journal of Financial Economics*, **118**, 684-712. <https://doi.org/10.1016/j.jfineco.2015.01.004>
- [24] Masulis, R. (1983) The Impact of Capital Structure Change on Firm Value: Some Estimates. *Journal of Finance*, **38**, 107-126.

- <https://doi.org/10.1111/j.1540-6261.1983.tb03629.x>
- [25] Ross, S.A. (1977) The Determination of Financial Structure: The Incentive-Signalling Approach. *Bell Journal of Economics*, **8**, 23-40. <https://doi.org/10.2307/3003485>
- [26] Kester, C.W. (1986) Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations. *Financial Management*, **15**, 97-113. <https://doi.org/10.2307/3665273>
- [27] Shyam-Sunder, L. and Myers, S.C. (1999) Testing Static Tradeoff against Pecking Order Models of Capital Structure. *Journal of Financial Economics*, **51**, 219-244. [https://doi.org/10.1016/S0304-405X\(98\)00051-8](https://doi.org/10.1016/S0304-405X(98)00051-8)
- [28] Myers, S.C. (1993) Still Searching for Optimal Capital Structure. *Journal of Applied Corporate Finance*, **6**, 4-14. <https://doi.org/10.1111/j.1745-6622.1993.tb00369.x>
- [29] Fama, E.F. and French, K.R. (2002) Testing Trade-Off and Pecking Order Predictions about Dividends and Debt. *Review of Financial Studies*, **15**, 1-33. <https://doi.org/10.1093/rfs/15.1.1>
- [30] Frank, M.Z. and Goyal, V.K. (2009) Capital Structure Decisions: Which Factors Are Reliably Important? *Financial Management*, **38**, 1-37. <https://doi.org/10.1111/j.1755-053X.2009.01026.x>
- [31] Jensen, M.C. and Meckling, W.H. (1976) Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure. *Journal of Financial Economics*, **3**, 305-360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- [32] Ashbaugh, H., Daniel, W.C. and Ryan, L. (2006) The Effect of Corporate Governance on Firms' Credit Ratings. *Journal of Accounting and Economics*, **42**, 203-243. <https://doi.org/10.1016/j.jacceco.2006.02.003>
- [33] Sun, J., Ding, L., Guo, M.J. and Li, Y. (2016) Ownership, Capital Structure and Financing Decision: Evidence from the UK. *The British Accounting Review*, **48**, 448-463. <https://doi.org/10.1016/j.bar.2015.04.001>
- [34] Kieschnick, R. and Moussawi, R. (2018) Firm Age, Corporate Governance, and Capital Structure Choices. *Journal of Corporate Finance*, **48**, 597-614. <https://doi.org/10.1016/j.jcorpfin.2017.12.011>
- [35] Myers, S.C. (1977) Determinants of Corporate Borrowing. *Journal of Financial Economics*, **5**, 147-175. [https://doi.org/10.1016/0304-405X\(77\)90015-0](https://doi.org/10.1016/0304-405X(77)90015-0)
- [36] Faulkender, M. and Petersen, M.A. (2006) Does the Source of Capital Affect Capital Structure? *Review of Financial Studies*, **19**, 45-79. <https://doi.org/10.1093/rfs/hhj003>
- [37] Zwiebel, J. (1996) Dynamic Capital Structure under Managerial Entrenchment. *American Economic Review*, **86**, 1197-1215.
- [38] Morellec, E. (2004) Can Managerial Discretion Explain Observed Leverage Ratios? *Review of Financial Studies*, **17**, 257-294. <https://doi.org/10.1093/rfs/hhg036>
- [39] Gompers, P., Ishii, J. and Metrick, A. (2003) Corporate Governance and Equity Prices. *Quarterly Journal of Economics*, **118**, 107-155. <https://doi.org/10.1162/00335530360535162>
- [40] Bebchuk, L., Cohen, A. and Ferrell, A. (2009) What Matters in Corporate Governance? *Review of Financial Studies*, **22**, 783-827. <https://doi.org/10.1093/rfs/hhn099>
- [41] Opler, T., Pinkowitz, L., Stulz, R. and Williamson R. (1999) The Determinants and Implications of Corporate Cash Holdings. *Journal of Financial Economics*, **52**, 3-46. [https://doi.org/10.1016/S0304-405X\(99\)00003-3](https://doi.org/10.1016/S0304-405X(99)00003-3)
- [42] Scott, D.F. (1972) Evidence of the Importance of Financial Structure. *Financial*

Management, **1**, 45-50. <https://doi.org/10.2307/3665143>

- [43] Scott, D.F. and Martin, J. (1975) Industry Influence on Financial Structure. *Financial Management*, **4**, 67-73. <https://doi.org/10.2307/3665473>
- [44] Hermalin, B.E. and Weisbach, M.S. (1998) Endogenously Chosen Boards of Directors and Their Monitoring of the CEO. *American Economic Review*, **88**, 96-118.
- [45] Listokin, Y. (2008) Interpreting Empirical Estimates of the Effect of Corporate Governance. *American Law and Economics Review*, **10**, 90-109. <https://doi.org/10.1093/aler/ahn005>
- [46] Coles, J., Daniel, N. and Naveen, L. (2008) Boards: Does One Size Fit All? *Journal of Financial Economics*, **87**, 329-356. <https://doi.org/10.1016/j.jfineco.2006.08.008>
- [47] John, K. and Knyazeva, A. (2006) Payout Policy, Agency Conflicts, and Corporate Governance. Working Paper, New York University, New York. <https://doi.org/10.2139/ssrn.841064>
- [48] Dittmar, A. and Mahrt-Smith, J. (2007) Corporate Governance and the Value of Cash Holdings. *Journal of Financial Economics*, **83**, 599-634. <https://doi.org/10.1016/j.jfineco.2005.12.006>
- [49] Frank, M.Z. and Goyal, V.K. (2003) Testing the Pecking Order Theory of Capital Structure. *Journal of Financial Economics*, **67**, 217-248. [https://doi.org/10.1016/S0304-405X\(02\)00252-0](https://doi.org/10.1016/S0304-405X(02)00252-0)

Appendix

Definition of variables

- G-Index: Corporate Governance Index created by Gompers, Ishii and Metrick (2003) [39]. The index has a theoretical (practical) range of 1 - 24 (1 - 18).
- Good Governance Firms: Firms that fall in the G-Index range of 1 - 5 (maximum shareholder power) following Gompers *et al.* (2003) [39].
- Poor Governance Firm: Firms that fall in the G-Index range of 14 - 18 (maximum management power) following Gompers *et al.* (2003) [39].
- MVA: The total market value of assets, computed as the sum of the book value of debt plus the market value of equity.
- LEV: The ratio of long term debt and long term debt in current liabilities to the market value of the total assets of the firm.
- PRFT: The ratio of the net income to the market value of the total assets of the firm.
- COL: The ratio of the property, plant and equipment to the market value of the total assets of the firm.
- SIZE: The log of the total assets of the firm.
- LTS: The log of the total sales of the firm.
- MTB: The ratio of the market value to the book value of the firm.
- CAPEX: The ratio of the total expenditures to the total assets of the firm.
- INTANG: The ratio of the intangible assets to the market value of the firm
- CF: The ratio of the total cash flows to the total assets of the firm.
- RISK: Standard deviation of the cash flows for the past 3 years.
- MED: The year-to-year industry median leverage.
- NWC: The ratio of the net working capital to the total assets of the firm.
- Dummy: Binary variables that equals 1 if it is a poor governance firm and 0 otherwise.
- i_PRFT: The dummy variable multiplied by the ratio of the net income to the market value of the total assets of the firm.
- i_COL: The dummy variable multiplied by the ratio of the property, plant and equipment to the market value of the firm.
- i_SIZE: The dummy variable multiplied by the log of the total assets of the firm.