

# Interaction Effects of Country-Level Governance Quality and Debt on Stock Returns in Developing Nations

Bolaji Tunde Matemilola<sup>1\*</sup>, Bany-Arifin A. N.<sup>1</sup> & Annuar Md. Nassir<sup>1</sup>

<sup>1</sup>*Department of Accounting and Finance, Universiti Putra Malaysia, Malaysia.*

**Abstract:** This study examines the moderating effects of country-level governance quality on the relationship between debt and stock returns, using 3,891 firms from 23 developing countries covering the period from 2006 to 2014. Applying the panel generalized method of moments to control for endogeneity, the findings reveal that country-level governance quality has positive moderating effects on the relationship between book debt and stock returns. Robustness check using market debt show that country-level governance quality has positive moderating effects on the relationship between market debt and stock returns. Additional analysis controls for the financial crisis years and the results are broadly similar, except that the coefficients of some variables change. The results suggest that strong governance quality lowers financial risk which encourage firms to raise debt capital needed to maximize stockholders' returns.

**Keywords:** Stock returns, debt, governance quality, M & M theory, GMM estimation, developing nations.

**JEL classification:** G32, G37

## 1. Introduction

The experience of frequent financial crisis in some developed and developing countries is partly attributed to weak governance problem. Low governance quality especially in developing countries reduces loan availability as lenders appear unwilling to provide credit to firms for fear of inadequate protections (Qian and Strahan, 2007). Prior studies (e.g., Martins *et al.* (2016), Aslan and Kumar (2014), Funchal and Monte-Mor (2016) in areas of finance have recognized the importance of governance quality. However, these studies focus mainly on the relationship between governance quality and debt maturity or governance and credit access.

This study differs from prior studies in the following ways. Firstly, we innovate using a single index measure of governance quality assembled by Kaufmann *et al.* (2009) to investigate the moderating effects of country-level governance quality on the relationship between debt and stock returns in developing nations. It is possible that the effects of debt on stock returns depend on better governance quality. Prior research focuses on the effects of governance and macroeconomic factors in predicting stock returns within the mean-variance investor framework, using time series data. Our approach focuses on the indirect effects of governance quality on the relationship between debt and stock returns using Modigliani and Miller's (hereinafter M-M) theory with taxes, and listed firms' panel data. These results support our argument that, when holding other factors constant, better governance quality appears to reduce bankruptcy costs, encouraging firms to raise debt capital to maximize the

---

\* Corresponding author: Bolaji Tunde Matemilola. Email: [matemilolabt@gmail.com](mailto:matemilolabt@gmail.com)  
Received 9 July 2018; Accepted 8 August 2018; Available online 3 September 2018.

debt interest tax shield, and more debt capital finance profitable investment that maximizes returns to stockholders.

Secondly, unlike prior studies, this study accounts for the effects of the financial crisis period (2008 and 2009) on the debt–governance quality–returns relationship using a dummy variable approach, which determines whether the effects of governance quality on the debt–stock returns relationship remain unchanged after accounting for financial crisis period. Third, more recent and adequately large firm-level and country-level datasets of developing countries are used to enhance the robustness of our findings. Specifically, the full sample comprised the annual firm-level and country-level data of 3,891 listed firms from 23 developing countries covering the 2006–2014 period. The study focuses on developing countries because they are mostly faced with these governance quality problems than other developed countries.

Our findings reveal that country-level governance quality positively moderates the relationship between book debt and stock returns. Moreover, the findings show that country-level governance quality positively moderates the relationship between market debt and stock returns. Moreover, the study controls for the financial crisis years (2008 and 2009), and the results are broadly similar, except that the magnitude of the coefficients of some explanatory variables change.

The rest of the study is organized as follows. Section 2 reviews the relevant literatures, Section 3 describes the data and methodology, Section 4 discusses the results, while section 5 concludes the paper.

## **2. Literature Review and Hypothesis**

### **2.1 Governance Quality, Debt and Stock Returns**

Low governance quality in developing countries has made it difficult for firms to raise the external debt capital (Agca *et al.*, 2013) needed for growth. Governance and laws are believed to shape financial contracts with respect to banks. Strong governance and laws that protect creditors' rights improve loan availability and encourage lenders to provide debt capital to firms (Qian and Strahan, 2007). Likewise, well-developed governance are important for firm growth, and firms that operate in countries with strong governance can obtain external capital and grow faster.

However, countries with weak governance in terms of low investor protections and low quality of law enforcement are likely to be characterized by narrower capital markets (La Porta *et al.*, 2000), which limits the capital available to firms to fund profitable investments that increase shareholders' returns. Similarly, weak governance, legal inefficiencies, weak protection of property rights, and high risk of expropriation are identified as the main factors limiting the growth of firms' capital (Papaionannou, 2009). Weak governance distort lenders' ability to channel resources to fund profitable investments efficiently (Law *et al.*, 2014). A subset of governance quality is property rights and it significantly increases firm value because of its impacts on both firm-level investment and financing decisions, which confirms the importance of property rights protections (Berkowitz *et al.*, 2015).

Better governance quality reduces financial risk because creditors' rights and property rights are protected (Pindado *et al.*, 2017; Qian and Strahan, 2007), legal inefficiencies are removed, risk of expropriation is reduced (Papaionannou, 2009; Law *et al.*, 2014), and enforcement of rule of law reduces lenders' fear of financial distress risk. Holding all other factors constant, better governance quality appears to reduce bankruptcy costs, which encourages firms to raise debt capital to maximize the debt interest tax shield and to finance profitable investments that maximize returns to stockholders.

## 2.2 Governance Quality and Firms' Debt

Turning to empirical studies, research to date on debt-stock returns relationship using the M-M (1963) theory with taxes has given inadequate attention to the importance of governance factors. Researchers (e.g., Fan *et al.*, 2012; Oztekin and Flannery, 2012) provide arguments supporting the need to focus on the effects of governance related factors on firms' debt. Likewise, researchers' (e.g., Berkowitz *et al.*, 2015; La Porta *et al.*, 1997) empirical evidence suggests that property rights protection, which is a subset of governance quality, significantly increase firm stock value because it influences firm-level financing and investment decisions. This study innovates and extends this line of research using a single-index measure of country-level governance quality to disentangle the moderating effects of governance quality on the debt-stock returns relationship in developing nations. Moreover, this study accounts for the 2008 and 2009 financial crisis effects on the debt-governance quality-returns relationship using a dummy variable approach.

Martins *et al.* (2016) examine the relationship between firms' ownership concentration and debt maturity structure and the effects of country-level governance on debt maturity-ownership concentration relationship. Using listed firms from Brazil and Chile over the 2008 to 2013 period, they find that country-level governance has negative effects on debt maturity. Their results suggest that in countries with strong governance systems that effectively protect debt holders, firms that have high benefits of control appear to use debt with short term maturity periods. Moreover, they find positive (negative) relationship between low ownership concentration (high ownership concentration) and debt maturity. Conversely, we investigate the moderating effects of country-level governance quality on the relationship between debt and stock returns for a panel of 3,891 listed firms from 23 developing nations.

Aslan and Kumar (2014) develop theoretically and validate empirically two National Governance Bundles (NGBs) that especially impact the agency costs of dominant shareholder control and the agency costs of debt using firms from 22 major European and Asian countries. The authors' findings reveal that strong National Governance Factors (NGFs) in the Creditors' Rights-Debt Enforcement (CRDE) and Corporate Information Quality (CIQ) bundles have significantly negative effects on the dominant shareholders' ownership choice and the firms' cost of debt. But the NGFs in the CRDE bundle appear to have greater impact on dominant shareholders' ownership structure choice compared with their effects on the cost of debt, while the reverse is true for most of the NGFs in the CIQ bundle.

Concentrating on governance at the firm-level, Funchal and Monte-Mor (2016) examine the effect of changes in corporate governance levels on the choice of firms' debt financing in Brazil, taking advantage of Sarbanes-Oxley Act as a natural experiment. Applying experimental design method and controlling for observed and unobserved firm heterogeneity via difference-in-difference estimator, they find that firms subjected to this new regulation (which raise governance requirements) observed a positive effects on their access to credit market, increasing their total debt and reducing the cost of debt. Funchal and Monte-Mor (2016) conclude that Sarbanes-Oxley produces economic gains to firms that comply with its requirements. However, our paper focuses mainly on the moderating effects of country-level governance quality on the relationship between debt and stock returns for a large panel of listed firms from 23 developing countries.

Earlier studies overlooked the effects of country-level governance quality, instead focusing on debt-stock returns relationship. In this line of research, Bhandari (1988) extends the basic M-M (1963) debt-returns relationship with taxes. Bhandari (1988) identifies the market value of debt as a separate risk factor that affects stock returns. He notes that previous empirical studies conclude that market betas are inadequate measures of risk. As an improvement on the previous model, Bhandari (1988) argues that the debt-equity ratio is a

natural proxy for financial risk and should have a positive relationship with stock returns. Bhandari's (1988) empirical results show that stock returns are positively related to market debt and that the results are robust to different estimation methods.

Using M-M (1963) debt-returns relationship with taxes, Masulis (1983) estimates the impact of a change in debt level on firm values in the United States. He examines two forms of capital structure changes: recapitalizations and issuer exchange offers. The parameters estimated are significant and consistent with the sign and model predictions. Debt changes have positive effects on both the firm stock value and stock prices. Similarly, Matemilola *et al.* (2012) investigate the effects of debt on stockholders' returns in South Africa, using M-M (1963) theory with taxes. The panel generalized method of moment (GMM) results show that both long term debt and total debt ratios have positive effects on stockholders' returns.

Conversely, George and Hwang (2010) report that average stock returns have a negative relationship with book debt ratio. They argue that the negative relationship holds for both raw returns and returns that are risk adjusted. George and Hwang (2010) claim that their results are consistent with the hypothesis that the risk of bearing financial distress costs is priced and that firms' with more exposure to these costs rationally avoid debt usage. They construct a debt leverage factor and show that it explains a substantial common component of time series variation in returns that differs from those explained by the other traditional factors (George and Hwang, 2010). Their results are consistent with the interpretation that financial risks should be priced separately in stock valuation.

Based on the discussion above, this study hypothesize in  $H_1$  (Alternate hypothesis) form that country-level quality positively moderates the relationship between book debt and stock returns in developing nations. Additionally, the study hypothesize in  $H_1$  form that country-level governance quality positively moderate the relationship between market debt and stock returns in developing nations. Our argument is that holding other things constant, better country-level governance quality appears to reduce bankruptcy costs which encourage firms' to raise debt capital to maximize debt interest tax-shield, and finance profitable investment that maximize returns to stockholders. The null hypothesis ( $H_0$ ) is that country-level governance quality does not moderate the relationship between debt (book debt and market debt) and stock returns in developing nations. A rejection of the null hypothesis will support our prediction.

### 3. Data and Methodology

This section describes the data and justification for each variable. It then explains the method employed in this study.

#### 3.1 Data

The data set consists of listed firms from 23 developing countries covering the period from 2006 to 2014. The paper defines developing nations based on their income level following World Bank classification. The study focuses on developing nations because they mostly faced governance quality problems. The data starts from 2006 and ends in 2014 due to data availability for the return determinants. Country-level governance quality is our main independent variable and it is obtained from World Governance Indicators (WGI). Kaufmann *et al.* (2009) apply unobserved components model which allow them to measure governance quality using six indicators (rule of law, regulatory quality, governance effectiveness, political stability, voice and accountability, and control of corruption) for many countries. As a measure of governance quality, this study constructs a single index by averaging the six indicators to obtain a single broader index as in Langbein and Knack (2010). Other macroeconomic data such as interest rate and inflation rate are obtained from World Development Indicators (World Bank database).

The other firm-specific data were extracted from the Datastream databases and it is unbalanced panel data. Both balanced and unbalanced panel datasets have advantages and disadvantages. The risk of using a balanced dataset is that the results may not represent the dataset population due to elimination of some observations. Moreover, some researchers (e.g., Lin and Chang, 2011) used only balanced panel datasets while other researchers (e.g., Oztekin and Flannery, 2012; Antoniou *et al.*, 2008) only used unbalanced panel datasets. However, using both balanced panel datasets and unbalanced panel datasets in a single study could be an avenue for future research. As part of the data sampling process, financial firms are excluded because their financial statement differs significantly from that of non-financial listed firms. Furthermore, the study excludes regulated firms (e.g. real estate investment trusts) because their debt ratio is usually higher than other non-financial firms (Rajan and Zingales, 1995; Bany-Ariffin, 2010, Matemilola *et al.*, 2013). The final sample comprises 33,971 firm-year observations across countries. In a robustness analysis, this study controls for the 2008 and 2009 financial crisis periods using dummy variable approach to account the impact of the financial crisis years on debt-governance quality-returns relationship. The financial crisis years may have some influence on stock returns determinants (Adomako, 2014). The study applies winsorization technique as in Lemmon *et al.* (2008) to mitigate the effects of extremes values of some data on the estimated parameters.

### 3.2 Variables Justification

Past studies have used several proxies to measure returns and debt. Bhandari (1988) measures stock returns as inflation adjusted, and uses market debt ratio. He reports positive effect of debt on stock returns suggesting that debt increases financial risk, resulting in higher returns. Matemilola *et al.* (2012) use accounting measures of returns, and debt leverage as ratio of book debt to total assets. Matemilola *et al.* (2012) find positive effect of debt on stockholders' returns suggesting debt increases financial risk, resulting in investors demanding higher returns. Researchers (e.g., George and Hwang, 2010; Gomes and Schmid, 2010) use stock returns measures. Likewise, this current study measures returns as the ratio of stock returns at time  $t+1$  to stock returns at time  $t$ , as in Gomes and Schmid (2010). This is a straight forward definition of stock returns.

Based on previous literature, debt is either measured in book-value debt or market-value debt ratios. In accordance with Gomes and Schmid (2010), this study focuses on book total debt ratio because it is not affected by price changes and book value of debt is closer to the value of a distress firm. As a robustness test, the study also uses market total debt ratio. Debt is expected to be positively related to stock returns because debt increases financial risk, resulting in investors' demanding higher returns to compensate them for added financial risk. This is consistent with the M-M (1963) theory with taxes stating that debt interest tax-shield increase stockholders' returns.

Our main independent variable is 'country-level governance quality' (single-index measure of governance quality). This governance data set is based on information gathered through cross-country surveys and expert polls. Kaufmann *et al.* (2009) apply unobserved components model which allow them to measure governance quality using six indicators (rule of law, regulatory quality, governance effectiveness, political stability, voice and accountability, and control of corruption) for many countries. As a measure of governance quality, this study constructs a single index by averaging the six indicators to obtain a single broader index as in Langbein and Knack (2010). Langbein and Knack (2010) note that WGI measure the same underlying governance concept; although, the six indicators are meant to capture different concept. They also argue that the six governance indicators are highly correlated.

Martins *et al.* (2016) examine the relationship between firms' ownership concentration and debt maturity structure and the effects of country-level governance on debt maturity-ownership concentration relationship in Chile. Their results suggest that in countries with strong governance systems that effectively protect debt holders, firms that have high benefits of control appear to use debt with short term maturity periods. Moreover, they find positive (negative) relationship between low ownership concentration (high ownership concentration) and debt maturity. Likewise, Aslan and Kumar (2014) develop theoretically and validate empirically two National Governance Bundles (NGBs) that especially impact the agency costs of dominant shareholder control and the agency costs of debt. The authors' findings reveal that strong National Governance Factors (NGFs) in the Creditors' Rights-Debt Enforcement (CRDE) and Corporate Information Quality (CIQ) bundles have significantly negative effects on the dominant shareholders' ownership choice and the firms' cost of debt.

This current study argues that better governance quality reduces financial risk because creditors' rights and property rights are protected (Qian and Strahan, 2007), legal inefficiencies are removed, risk of expropriation are reduced (Papaionannou, 2009; Law *et al.*, 2014), and enforcement of rule of law reduces lenders' fear of financial distress risk. Our argument is that holding other factors constant, better governance quality appears to reduce bankruptcy costs which encourages firms' to raise debt capital to maximize debt interest tax-shield, and more debt capital finance profitable investment that maximize returns to stockholders. Therefore, this paper expects governance quality to positively moderate the relationship between debt and stock returns in developing nations.

Size is measured as log of total assets. Size is related to firms' profitability and big firms tend to have higher earnings and face a less bankruptcy risk (Fama and French, 1992). Conversely, Amihud (2002) and Horowitz *et al.* (2000) find that size has no effect on returns. They argue that investors have realized smaller firms are capable of outperforming bigger firms in the stock market and they were no longer constantly under-valued. This study expects size have positive effects on stock returns because bigger firms are more stable and less likely to go bankrupt (Gomes and Schmid, 2010).

Book-to-Equity (BE) is the ratio of book value of equity to market value of equity. Auret and Sinclair (2006) note that book-to-market equity is an important determinant of stock returns with positive signs. Moreover, it subsumes the explanatory power of size variables in the same regression. Book-to-market equity is expected to be positively related to stock returns because its captures relative earning prospects. Thus, high-book-to-market equity ratio should increase stock returns. Tax (effective tax rate) is the ratio of tax liability to taxable income. Paying taxes increase costs, in which case it should lower stock returns (Mironov, 2013). Effective tax rate is expected to have negative effects on stock returns because as more taxes are paid, returns should decrease.

On the effects of inflation on returns, Fisher (1930) postulates that the nominal interest rate observed at the beginning of a period  $t$  should equal the sum of the real rate plus expected inflation. In theory, inflation should be positively related to stocks return (Fisher, 1930). But, empirical evidence has produced inconsistent results. Fama and Schwert (1977) find that expected and unexpected inflation have negative effects on stock returns, in United States between 1953 and 1971 time period, suggesting that higher inflation appears to be bad news. Conversely, Brown *et al.* (2016) report positive effect of inflation on earnings yield, implying that expected returns are also positively related to inflation. Regarding interest rate, a general consensus holds that interest rate is negatively related to stock returns. In earlier study, Solnik (1983) also finds that interest rate has negative effects on stock returns. This paper expects interest rate to have negative effects on stock returns because higher interest rate increases the costs of capital, resulting in lower returns.

### 3.3 Econometric Model

The study follows the framework of M-M (1963) model with taxes, but with some modifications. Specifically, this paper specifies dynamic panel model below:

$$R_{ijt} = (1-\alpha)R_{ijt-1} + \beta_1 + \beta_2 D_{ijt} + \beta_3 GOV_{jt} + \beta_4 (D*GOV)_{ijt} + \beta_5 Size_{ijt} + \beta_6 BME_{ijt} + \beta_7 Tax_{ijt} + \beta_8 INT_{jt} + \beta_9 INF_{jt} + \beta_{10} LO_{jt} + \eta_i + \lambda_t + \mu_{ijt} \quad (1)$$

$$R_{ijt} = (1-\alpha)R_{ijt-1} + \beta_1 + \beta_2 D_{ijt} + \beta_3 GOV_{jt} + \beta_4 (D*OV)_{ijt} + \beta_5 Size_{ijt} + \beta_6 BME_{ijt} + \beta_7 Tax_{ijt} + \beta_8 INT_{jt} + \beta_9 INF_{jt} + \beta_{10} LO_{jt} + \beta_{11} FC08_{jt} + \beta_{12} FC09_{jt} + \eta_i + \lambda_t + \mu_{ijt} \quad (2)$$

where

- $R_{ijt}$  = stock returns for the i firm in country j and t time (using stock return as measure of returns)
- $R_{ijt-1}$  = lagged 1 period stock returns
- $\beta_1$  = the constant
- $D_{ijt}$  = debt for the i firm in country j and t time (using book debt and market debt ratios as proxy for financial risk)
- $GOV_{jt}$  = country-level governance quality for the j country and t time (using single-index measure of governance quality)
- $(D*GOV)_{ijt}$  = product of debt and governance quality for the i firm in country j and t time
- $Size_{ijt}$  = size for the i firm in country j and t time
- $BME_{ijt}$  = book-to-market equity ratio for the i firm in country j and t time
- $Tax_{ijt}$  = effective tax rate for the i firm in country j and t time
- $INT_{jt}$  = interest rate for the i country and t time
- $INF_{jt}$  = inflation rate for the i country and t time
- $LO_{jt}$  = dummy variable equals 1 for firms operating in common law countries, and zero otherwise
- $FC08_{jt}$  = dummy variable equals to 1 for the financial crisis year 2008, and zero otherwise
- $FC09_{jt}$  = dummy variable equals to 1 for the financial crisis year 2009, and zero otherwise
- $\eta_i$  = the unobservable firm-specific effects
- $\lambda_t$  = the time effects
- $1-\alpha$  = speed of adjustment to previous stock returns
- $\mu_{ijt}$  = the residual term

Subscript 'i' 'j' and 't' represents a firm, country and time period, respectively.

This study specifies a dynamic panel model because stock returns display persistent behavior, suggesting that previous year stock returns affect current stock returns (Flannery and Hankins, 2013; Matemilola *et al.*, 2012). This study applies the two-step system generalized method of moments because it resolves the endogenous problem using efficient instrumental variable techniques (Flannery and Hankins, 2013). The model is estimated with two-step system generalized method of moments. Blundell and Bond (1998) system generalized method of moment combine level-equation and difference-equation, and it better addresses endogeneity with efficient instrumental variable technique. The two-step system

generalized method of moments combine the difference generalized method of moment conditions in equation (3) and additional moment condition in equation (4) to produce unbiased estimators.

$$E [\Delta\mu_{ijt} * R_{t-k}] = E [\Delta\mu_{ijt} * X_{t-k}] = 0 \quad k > 1. \quad (3)$$

where  $R_{t-k}$  is the higher order lags of stock returns (dependent variable) and  $X_{t-k}$  is the higher order lags of independent variables used as internal instruments. In words, the correlation between the differenced error-term and lagged stock returns variable use as instrument as well as lagged independent variables use as instruments equals zero. The explanatory variables (except interest rate and inflation rate) are treated as endogenous variable and the two-step system generalized method of moments' internal instruments are used to resolve the endogenous problem. The lagged levels of the variables use as instruments in the difference generalized method of moments become weak instruments if the explanatory variables are persistent (Blundell and Bond, 1998). Thus, the two-step system generalized method of moments adds additional moment conditions:

$$E [\Delta R_{ijt} \eta_i] = 0 \quad (4)$$

In words, the correlation between the differenced instruments ( $\Delta R_{ijt}$ ), and unobservable firm-specific effects ( $\eta_i$ ) in the level equation equals zero. In all the estimations, the study uses two-step estimates because it uses the first-step errors to construct heteroskedasticity-consistent standard errors or optimal weighting matrices (Blundell and Bond, 1998).

## 4. Empirical Results

### 4.1 Descriptive Statistics and Correlation Results

Tables 1 below shows the descriptive statistics. The single index governance quality index (GOV) has a minimum value of 5.373 and a maximum value of 84.816. As expected, the mean value of the single governance quality index falls within the minimum and maximum values. Moreover, ratio of book value of total debt to market value of equity plus book value of debt (Tdmv) has the lowest standard deviation value suggesting that it is the least volatile variable. See Appendix A for details of the sample size.

Table 2 contains the correlation results, which reveal that the degree of association between most of the variables is weak, because the correlation coefficients are generally lower among the independent variables and statistically significant. Thus, there is little risk of multicollinearity problems among the independent variables.

### 4.2 Panel Generalized Method of Moment Results (Main Results)

Tables 3 and 4 reports the results of the 3,891 listed firms from 23 developing countries. The diagnostic checks on the two-step system generalized method of moments reveal the following. The models passed the AR (2) tests, as indicated by the insignificant p-values showing that there is an absence of second order serial correlation. Overall, the validity of the instruments and of the additional instruments is confirmed, as indicated by the insignificant p-values of the difference in Hansen tests in the models.

**Table 1:** Descriptive statistics for 3,891 listed firms from 23 developing countries, 2006-2014

	Unit of Measurement	Mean	Std dev.	Min.	Max.
R	The ratio of stock return at time t+1 to stock return at time t, as in Gomes and Schmid (2010)	1.366	2.701	0.002	5.188
Tdbv	The ratio of short-term debt plus long-term debt to total assets (property, plant and equipment).	0.347	0.374	0.000	1.000
Tdmv	The ratio of book value of total debt to market value of equity plus book value to total debt.	0.261	0.278	0.000	1.000
GOV	Governance quality (Single Index) [(RoI+Regq+GE+PS+VA+CC)/6]	61.652	19.599	5.373	84.816
Size	the log of total assets	15.238	3.324	9.210	31.494
BME	the ratio of book value of equity to market value of equity	2.476	6.624	3.149	64.484
Tax	The ratio of tax liabilities to total taxable income	0.111	0.616	0.240	89.257
INT	Interest rate: annual interest rate	4.232	6.097	-42.310	41.345
INF	Inflation: annual inflation rate. Growth in consumer price index	4.765	3.415	-0.678	26.240
F08	Dummy variable equals to 1 for the financial crisis year 2008, and zero otherwise.	0.100	0.313	0.000	1.000
F09	Dummy variable equals to 1 for the financial crisis year 2009, and zero otherwise.	0.110	0.313	0.000	1.000
LO	Dummy variable equals 1 for firms operating in common law countries, and zero otherwise.	0.611	0.488	0.000	1.000

Notes: <sup>a</sup> N\*T Total Observations (33971) is for listed firms from 23 developing countries. 23 Countries covered are included in appendix A. <sup>b</sup> RoI (Rule of Law): reflects perceptions of the extent to which agents have confidence and abide by society rules (ranges from 0 to 100). Regq (Regulatory Quality): reflects perceptions of the ability of the government to formulate and implement sound policies (ranges from 0 to 100). GE (Governance Effectiveness): reflects perceptions of the quality of public services and the degree of its independence from political pressure (from 0 to 100). PS (Political Stability): reflects perceptions of the likelihood that the government will be destabilized by violent means (ranges from 0 to 100). VA (Voice and Accountability): reflects perceptions of the extent to which a country's citizen are able to participate in selecting government (ranges from 0 to 100). CC (Control of Corruption): reflects perceptions of the extent to which public power is exercised for gain (ranges from 0 to 100).

**Table 2:** Correlations results for 3,891 listed firms from 23 developing countries, 2006-2014

	R	Tdbv	Tdmv	GOV	Size	BME	Tax	INT	INF
R	1.000								
Tdbv	-0.020 <sup>b</sup>	1.000							
Tdmv	-0.071 <sup>a</sup>	0.144 <sup>a</sup>	1.000						
GOV	0.104 <sup>a</sup>	-0.034 <sup>a</sup>	-0.069 <sup>a</sup>	1.000					
Size	0.010 <sup>a</sup>	0.040 <sup>a</sup>	0.110 <sup>a</sup>	-0.228 <sup>a</sup>	1.000				
BME	-0.011 <sup>a</sup>	-0.035 <sup>a</sup>	-0.138 <sup>a</sup>	-0.305 <sup>a</sup>	-0.317 <sup>a</sup>	1.000			
Tax	-0.003	0.0010	0.004	-0.001	-0.004	-0.005	1.000		
INT	-0.0187 <sup>a</sup>	0.029 <sup>a</sup>	0.024 <sup>a</sup>	-0.039 <sup>a</sup>	-0.024 <sup>a</sup>	0.0041	-0.003	1.0000	
INF	-0.0192 <sup>a</sup>	0.061 <sup>a</sup>	0.110 <sup>a</sup>	-0.363 <sup>a</sup>	-0.150 <sup>b</sup>	0.347 <sup>a</sup>	0.0143 <sup>a</sup>	-0.170 <sup>a</sup>	1.00

Notes: See Table 1 for the definition of variables and measurements. Asterisks (<sup>a</sup>) and (<sup>b</sup>) indicate correlation is significant at 1 and 5 percent, respectively.

**Table 3:** System-GMM two-step estimation results for 3,891 firms from 23 developing countries, 2006-2014 (Main results)

	Model 1	Model 2
R <sub>it-1</sub> (Lag Stock Returns)	0.780*** (67.56)	0.783*** (67.67)
Book debt (Tdbv)	0.431*** (20.04)	0.426*** (21.25)
GOV (Governance quality Single Index)	-0.106*** (-34.32)	-0.088*** (-20.65)
Book debt (Tdbv) * GOV	0.039*** (19.51)	0.046*** (15.21)
Size	0.562*** (24.71)	0.377*** (25.71)
BME	-0.030*** (-22.27)	-0.049*** (-9.77)
Tax	0.009** (2.40)	0.008* (1.94)
INT (Interest rate)	-0.101*** (-27.01)	-
INF (Inflation rate)	-0.379*** (-25.49)	-
Legal Origin (LO)	0.331*** (24.44)	0.133*** (9.97)
AR(2) [P-value]	0.298	0.296
Difference Hansen Tests [P-value]	0.132	0.105
Instruments	134	106
Variance Inflation Factor (VIF)	3.16	3.07
Cross-sectional observation (N)	3891	3891
Observation after estimation (N*T)	30058	30058

Notes: <sup>a</sup> See Table 1 for the definition of variables and measurements. Asterisks indicate significance at 1% (\*\*\*) and 5% (\*\*). <sup>b</sup> T-statistics (in parenthesis) of System-GMM model are based on Windmeijer-corrected standard errors. <sup>c</sup> 2<sup>nd</sup> order serial correlation in first difference is distributed as N(0, 1) under the null of no serial correlation in the residuals. <sup>d</sup> Difference Hansen over identification test and null that instruments are valid. R<sub>it-2</sub>, Tdbv<sub>it-2</sub>, GOV<sub>it-2</sub>, Size<sub>it-2</sub>, BME<sub>it-2</sub>, Tax<sub>it-2</sub>, are used as Instruments.

In order to overcome the problem of too many instruments, the study restricts the number of instruments to two in each period. Consequently, in all estimations, the number of ‘N’ cross-sectional (firms across countries) observation is greater than the number of instruments, supporting the validity of the estimations. In the empirical results, book total debt ratio is our main proxy for financial risk, and market total debt ratio is used to check the robustness of our findings to alternative measure of financial risk. The lagged dependent variable is statistically significant at the one percent level in all the models, supporting the relevance of the dynamic model to conduct research on the debt–governance quality–returns relationship. Intuitively, the results suggest that previous-year stock returns affect current-year stock returns.

The coefficient of the interaction term (debt\*governance quality) is the main focus, as it indicates how much the effect of debt changes with a one-unit change in governance quality. The empirical results show that governance quality is statistically significant and positively moderates the relationship between book debt and stock returns (see Table 3, Models 1 and 2). As a robustness test, governance quality is statistically significant and positively moderates the relationship between market debt and stock returns (see Table 4, Models 3 and 4).

**Table 4:** System-GMM two-step estimation results for 3,891 firms from 23 developing countries, 2006-2014 (Robustness check 1)

	Model 3	Model 4
R <sub>it-1</sub> (Lag Stock Returns)	0.784*** (56.65)	0.785*** (65.16)
Market debt (Tdmv)	0.942*** (7.51)	0.506*** (2.99)
GOV (Governance quality Single Index)	0.0161*** (-13.04)	0.146*** (-12.39)
Market debt (Tdmv) * GOV	-0.479*** (12.74)	-0.092*** (26.53)
Size	0.081** (2.15)	0.192*** (3.45)
BME	-0.035*** (-9.37)	-0.039*** (-9.91)
Tax	0.006** (2.25)	0.010** (2.15)
INT (Interest rate)	-0.065*** (-5.49)	-
INF (Inflation rate)	-0.691*** (-26.20)	-
Legal Origin (LO)	0.189*** (5.55)	0.196*** (7.74)
AR(2) [P-value]	0.264	0.270
Difference Hansen Tests [P-value]	0.147	0.117
Instruments	134	106
Variance Inflation Factor (VIF)	3.17	3.04
Cross-sectional observation (N)	3891	3891
Observation after estimation (N*T)	30058	30058

Notes: <sup>a</sup> See Table 1 for the definition of variables and measurements. Asterisks indicate significance at 1% (\*\*\*) and 5% (\*\*). <sup>b</sup> T-statistics (in parenthesis) of System-GMM model are based on Windmeijer-corrected standard errors. <sup>c</sup> 2<sup>nd</sup> order serial correlation in first difference is distributed as N (0, 1) under the null of no serial correlation in the residuals. <sup>d</sup> Difference Hansen over identification test and null that instruments are valid. R<sub>it-2</sub>, Tdmv<sub>it-2</sub>, GOV<sub>it-2</sub>, Size<sub>it-2</sub>, BME<sub>it-2</sub>, Tax<sub>it-2</sub>, are used as Instruments.

The results reject the null hypothesis ( $H_0$ ) that governance quality does not moderate the relationship between debt (book debt and market debt) and stock returns in developing nations. Thus, our alternative hypothesis that governance quality positively moderates the relationship between debt (book debt and market debt) and stock returns in developing nations, is supported. These results support our argument that, holding other factors constant, better governance quality appears to reduce bankruptcy costs, thus encouraging firms to raise debt capital to maximize the debt interest tax shield, and more debt capital finance profitable investments that maximize returns to shareholders.

Apart from the moderating effects of governance quality, this study also finds that governance quality has direct negative effects on returns, suggesting that governance quality lowers risk, resulting in lower returns. Better governance quality reduces financial risk because creditors' rights and property rights are protected (Qian and Strahan, 2007), legal inefficiencies are removed, risk of expropriation is reduced (Papaionannou, 2009; Law *et al.*, 2014), and enforcement of the rule of law reduces lenders' fear of financial distress risk. The result regarding the direct effects of governance quality on returns is consistent with El Ghoul *et al.*'s (2017) findings that creditor rights negatively affect stock returns of highly leveraged firms. Although the current paper adopts the M-M (1963) valuation model because this model

emphasizes debt as the main source of financial risk, we also find that governance quality predicts returns within the M-M's valuation model with taxes.

In addition to governance quality affecting stock returns, some traditional firm-specific (e.g., debt and size with positive signs) and macroeconomic (e.g., interest rate with a negative sign) factors consistently predict stock returns. Debt is positively related to stock returns, suggesting that debt increases financial risk, resulting in investors demanding higher returns to compensate for added financial risk. This is consistent with the Modigliani and Miller (1963) theory with taxes.

The results of this study are consistent with those of Bhandari (1988), who extended Modigliani and Miller's model and concluded that the market value of debt is a separate risk factor that positively affects stock returns in the United States. This study's results are also in line with Matemilola *et al.*'s (2012) findings that debt has positive effects on shareholders' returns in South Africa. Conversely, our result is inconsistent with George and Hwang (2010) who report that average stock returns have a negative relationship with book debt. George and Hwang (2010) claim that their results are consistent with the hypothesis that the risk of bearing financial distress costs is priced and that firms' with more exposure to these costs rationally avoid debt usage.

Size is positively related to stock returns, consistent with Fama and French's (1992) argument that size is related to firms' profitability and that big firms tend to have higher earnings and face lower bankruptcy risk. Consistent with this study finding, Gomes and Schmid (2010) find positive effects of size on stock returns. They argue that size is positively related to stock returns because bigger firms are more stable and less likely to go bankrupt. The inflation rate is negatively related to stock returns, suggesting that the stock market appears not to hedge against inflation. This result is consistent with Fama and Schwert's (1977), Ely and Robinson's (1989) findings that inflation has negative effects on real stock returns, suggesting that higher inflation rates lower stock returns. Our findings reveal that interest rate is negatively related to stock returns. In an earlier study, Solnik (1983) also finds that interest rate has negative effects on stock returns, because a higher interest rate increases the costs of capital, resulting in lower returns.

### **4.3 Robustness Results Controlling for Financial Crisis Years**

Similarly, for the estimation that controls for the effects of the 2008 and 2009 financial crisis, the models passed the AR (2) tests, as indicated by the insignificant p-values suggesting there is an absence of second-order serial correlation. Overall, the validity of the instruments and additional instruments is confirmed, as indicated by the insignificant p-values of the difference in Hansen tests in all the models. Additionally, in all the estimations, the number of cross-sectional observations exceeds the number of instruments, which indicates that the estimations are valid. 2008 and 2009 are used as the crisis years because the impact of the 2007 financial crisis took some time before it started impacting the developing countries. The lagged dependent variable is statistically significant at the one percent level in all the models, supporting the relevance of the dynamic model to conduct research on debt-governance quality-returns relationship. Intuitively, the results suggest that previous-year stock returns affect current-year stock returns.

The coefficient of the interaction-term (debt\* governance quality) show the governance quality is statistically significant, and positively moderate the relationship between book debt and stock returns (see Table 5, Models 5 and 6). As a robustness test, governance quality is statistically significant and positively moderates the relationship between market debt and stock returns (see Table 6, Models 7 and 8).

The results also support our alternative hypothesis that governance quality positively moderates the relationship between debt (book debt and market debt) and stock returns in

developing nations. These results support our argument that holding other factors constant, better governance quality appears to reduce bankruptcy costs, which encourages firms' to raise debt capital to maximize debt interest tax-shield, and more debt capital finance profitable investment that maximize returns to stockholders. However, the magnitude of the coefficients of the interaction term reduces after controlling for the effects of the 2008 and 2009 financial crisis periods. Moreover, the coefficients of the financial crisis dummies are statistically significant and negative, suggesting that financial crisis negatively affect stock returns in developing nations.

Apart from the moderating effects of governance quality, this study also finds that governance quality has direct negative effects on stock returns suggesting that governance quality lowers returns. Better governance quality lowers financial risk because creditors' rights and property rights are protected (Qian and Strahan, 2007), legal inefficiencies are removed, risk of expropriation is reduced (Papaionannou, 2009; Law *et al.*, 2014), and enforcement of the rule of law reduces lenders' fear of financial distress risk.

**Table 5:** System-GMM two-step estimation results for 3,891 listed firms from 23 developing countries, 2006-2014 (accounting for financial crisis years) [Robustness check 2]

	Model 5	Model 6
R <sub>it-1</sub> (Lag Stock Returns)	0.779*** (60.24)	0.780*** (44.63)
Book debt (Tdbv)	0.226*** (8.16)	0.337*** (20.94)
GOV (Governance quality Single Index)	-0.125*** (-25.83)	-0.076*** (-20.76)
Book debt (Tdbv) * GOV	0.014*** (7.82)	0.023*** (14.39)
Size	0.431*** (23.52)	0.351*** (24.92)
BME	-0.029*** (-14.20)	-0.036*** (-15.42)
Tax	0.037** (2.24)	0.007** (2.56)
INT (Interest rate)	-0.063*** (-22.73)	-
INF (Inflation rate)	-0.286*** (-29.69)	-
Legal Origin (LO)	0.265*** (29.94)	0.193*** (6.74)
Financial Crisis Dummy (FC08)	-0.096*** (-22.19)	-0.095*** (-10.77)
Financial Crisis Dummy (FC09)	-0.157*** (-22.69)	-0.153*** (-15.53)
AR(2) [P-value]	0.305	0.299
Difference Hansen Tests [P-value]	0.151	0.109
Instruments	136	106
Variance Inflation Factor (VIF)	3.01	2.99
Cross-sectional observation (N)	3891	3891
Observation after estimation (N*T)	30058	30058

Notes: <sup>a</sup> See Table 1 for the definition of variables and measurements. Asterisks indicate significance at 1% (\*\*\*) and 5% (\*\*). <sup>b</sup> T-statistics (in parenthesis) of System-GMM model are based on Windmeijer-corrected standard errors. <sup>c</sup> 2<sup>nd</sup> order serial correlation in first difference is distributed as N(0, 1) under the null of no serial correlation in the residuals. <sup>d</sup> Difference Hansen over identification test and null that instruments are valid. R<sub>it-2</sub>, Tdbv<sub>it-2</sub>, GOV<sub>it-2</sub>, Size<sub>it-2</sub>, BME<sub>it-2</sub>, Tax<sub>it-2</sub>, are used as Instruments.

In addition to governance quality affecting stock returns, some traditional firm-specific (e.g. debt and size with positive signs) and macroeconomic factor (e.g., interest rate with negative sign) consistently predict stock returns, except that the magnitude of the coefficients of some explanatory variables changes. Debt retains its positive effects on stock returns consistent with the Modigliani and Miller (1963) theory with taxes.

**Table 6:** System-GMM two-step estimation results for 3,891 listed firms from 23 developing countries, 2006-2014 (accounting for crisis years) [Robustness check 3]

	Model 7	Model 8
R <sub>it-1</sub> (Lag Stock Returns)	0.782*** (50.98)	0.783*** (61.59)
Market debt (Tdmv)	0.825*** (9.22)	0.501** (2.57)
GOV (Governance quality Single Index)	-0.006** (-2.50)	-0.114*** (-12.39)
Market debt (Tdmv) * GOV	0.124*** (3.14)	0.072*** (20.19)
Size	0.072** (4.29)	0.187*** (3.49)
BME	-0.031*** (-13.11)	-0.035*** (-8.57)
Tax	0.004** (2.13)	0.005** (2.29)
INT (Interest rate)	-0.051*** (-5.09)	-
INF (Inflation rate)	-0.584*** (-20.27)	-
Legal Origin (LO)	0.175*** (4.33)	0.192*** (6.73)
Financial Crisis Dummy (FC08)	-0.058*** (-12.96)	-0.083*** (-5.44)
Financial Crisis Dummy (FC09)	-0.182*** (-20.46)	-0.149*** (-14.15)
AR(2) [P-value]	0.265	0.268
Difference Hansen Tests [P-value]	0.132	0.114
Instruments	136	106
Variance Inflation Factor (VIF)	3.28	3.13
Cross-sectional observation (N)	3891	3891
Observation after estimation (N*T)	30058	30058

Notes: <sup>a</sup> See Table 1 for the definition of variables and measurements. Asterisks indicate significance at 1% (\*\*\*) and 5% (\*\*). <sup>b</sup> T-statistics (in parenthesis) of System-GMM model are based on Windmeijer-corrected standard errors. <sup>c</sup> 2<sup>nd</sup> order serial correlation in first difference is distributed as N (0, 1) under the null of no serial correlation in the residuals. <sup>d</sup> Difference Hansen over identification test and null that instruments are valid. R<sub>it-2</sub>, Tdbv<sub>it-2</sub>, Tdmv<sub>it-2</sub>, GOV<sub>it-2</sub>, Size<sub>it-2</sub>, BME<sub>it-2</sub>, Tax<sub>it-2</sub>, are used as Instruments.

## 5. Conclusion

Few available studies have documented evidence indicating that a subset of governance factors affect stock returns. Unlike prior studies, the current study adds to the growing literature on the debt–stock returns relationship by examining the moderating effects of governance quality on this relationship using a single index measure of governance quality. Moreover, this study conducts additional analysis controlling for the effects of the financial crisis years on stock returns using a dummy variable approach. Moreover, more recent and adequately large firm-level and country-level datasets of developing nations are used to enhance the robustness of our findings. Our main findings are summarized as follows. The

study finds that single index measure of governance quality significantly moderates the book debt and stock returns relationship. Likewise, single index measure of governance quality significantly moderates the market debt and stock returns relationship. Similar results are found after controlling for the effects of the financial crisis years, except that the magnitudes of the coefficients of some variables change slightly. These results support our argument that, when holding other factors constant, better governance quality appears to reduce bankruptcy costs, thus encouraging firms to raise debt capital to maximize debt interest tax-shield, and more debt capital finance profitable investments that maximize returns to stockholders.

These results have practical policy implications. Firstly, the indirect effects (positive coefficients of the interaction of debt and governance quality) results suggest that strong governance quality lowers bankruptcy costs which encourage firms to raise debt capital needed to maximize stockholders' returns. Secondly, the results suggest that decisions to invest are not made in a vacuum but rather appear to depend on better governance environments. Therefore, policymakers should continue to strengthen the quality of governance. Improving the quality of governance encourages investors to channel the financial resources needed to fund profitable investments. Third, financial managers with better knowledge of the governance factors affecting their business operations make better corporate finance decisions that lower risk and enhance stockholders' returns.

The study has some limitation, like other prior studies, we do not explore how different level of governance quality (low or high governance quality) affect debt and stock returns relationship. Future research may explore how different level (e.g., low, medium and high) of governance quality affect the relationship between debt and stock returns. Additionally, the current paper focuses on the M-M (1963) valuation model because this model emphasizes debt as the main source of financial risk. The results reveal that governance quality reduces financial risk. However, it is possible that due to governance quality, some firms (e.g. technology firms) could increase business risk. Therefore, future research may explore the interaction effects of governance quality and business risk on stock returns in developing countries.

## References

- Agca, S., Nicolo, G. D., & Detragiache, E. (2013). Banking sector reforms and corporate leverage in emerging markets. *Emerging Markets Review*, 17, 125-149.
- Amihud, Y. (2002). Illiquidity and stock returns: Cross-section and time-series effects. *Journal of Financial Markets*, 5(1), 31-56.
- Antonioni, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: Capital market-oriented versus bank-oriented institutions. *The Journal of Financial and Quantitative Analysis*, 43(1), 59-92.
- Aslan, H., & Kumar, P. (2014). National governance bundles and corporate agency costs: A cross-country analysis. *Corporate Governance: An International Review*, 22(3), 230-251.
- Auret, C. J., & Sinclair R. A. (2006). Book-to-market ratio and returns on the JSE. *Investment Analyst Journal*, 35(63), 31-38.
- Bany-Arifin, A. N. (2010). Disentangling the driving force of pyramidal firms' capital structure: A new perspective. *Studies in Economics and Finance*, 27(3), 195 – 210.
- Berkowitz, D., Lin, C., & Ma, Y. (2015). Do property rights matter? Evidence from a property law enactment. *Journal of Financial Economics*, 116(3), 583-593.
- Bhandari, L. C. (1988). Debt/equity ratio and expected common stock returns: Empirical evidence. *The Journal of Finance*, 43(2), 507-528.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.
- Brown, W. O., Huang, D., & Wang, F. (2016). Inflation illusion and stock returns. *Journal of Empirical Finance*, 35, 14-24.

- Danso, A., & Adomako, S. (2014). Financing behavior of firms and financial crisis. *Managerial Finance*, 40(12), 1159-1174.
- El Ghoul, S., Guedhami, O., Kwok, C. C. Y., & Zheng, Y. (2017). *Creditor rights and the costs of high leverage: Evidence from capital structure and product market interactions* (SSRN Working Paper No. 2980493). Retrieved from Social Science Research Network website: <https://ssrn.com/abstract=2980493>
- Ely, D. P., & Robinson, K. J. (1989). The stock market and inflation: A synthesis of the theory and evidence. *Economic Review-Federal Reserve Bank of Dallas*, 1989(March), 17-29.
- Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance*, 47(2), 427-465.
- Fama, E. F., & Schwert, G. W. (1977). Asset returns and inflation. *Journal of Financial Economics*, 5(2), 115-146.
- Fan, J. P. H., Titman, S., & Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *The Journal of Financial and Quantitative Analysis*, 47(1), 23-56.
- Fisher, I. (1930). *The theory of interest rates*. New York, NY: The Macmillan Company.
- Flannery, M. J., & Hankins, K. W. (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance*, 19, 1-19.
- Funchal B., & Monte-Mor, D. S. (2016). Corporate governance and credit access in Brazil: The Sarbanes-Oxley Act as a natural experiment. *Corporate Governance: An International Review*, 24(5), 528-547.
- George, T. J., & Hwang, C. Y. (2010). A resolution of the distress risk and leverage puzzles in the cross section of stock returns. *Journal of Financial Economics*, 96(1), 56-79.
- Gomes, J. F., & Schmid, L. (2010). Levered returns. *The Journal of Finance*, 65(2), 467- 494.
- Horowitz, J. L., Loughran, T., & Savin, N. E. (2000). The disappearing size effect. *Research in Economics*, 54(1), 83-100.
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2009). *Governance matters VIII: Aggregate and individual governance indicators for 1996-2008* (Policy Research Working Paper No. 4978). Retrieved from World Bank website <http://documents.worldbank.org/curated/en/598851468149673121/pdf/WPS4978.pdf>
- Langbein, L., & Knack, S. (2010). The worldwide governance indicators: Six, one or none? *The Journal of Development Studies*, 46(2), 350-370.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, 52(3), 1131-1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58(1-2), 3-27.
- Law, S. H., Tan, H. B., & Azman-Saini, W. N. W. (2014). Financial development and income inequality at different levels of institutional quality. *Emerging Markets Finance and Trade*, 50(Suppl 1), 21-33.
- Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: Persistence and the cross-section of corporate capital structure. *The Journal of Finance*, 63(4), 1575-1608.
- Lin, F. L., & Chang, T. (2011). Does debt affect firm value in Taiwan? A panel threshold regression analysis. *Applied Economics*, 43(1), 117-128.
- Martins, H. C., Schiehl, E., & Terra, P. R. S. (2016). Country-level governance quality, ownership concentration, and debt maturity: A comparative study of Brazil and Chile. *Corporate Governance: An International Review*, 25(4), 236-254.
- Masulis, R. W. (1983). The impact of capital structure change on firm value: Some estimates. *The Journal of Finance*, 38(1), 107-126.
- Matemilola, B. T., Bany-Arifin, A. N., & McGowan, C. B. (2013). Unobservable effects and firm's capital structure determinants. *Managerial Finance*, 39(12), 1124-1137.
- Matemilola, B. T., Bany-Arifin, A. N., & Azman Saini, W. N. W. (2012). Financial leverage and shareholder's required returns: Evidence from South Africa corporate sector. *Transition Studies Review*, 18(3), 601- 612.
- Mironov, M. (2013). Taxes, theft, and firm performance. *The Journal of Finance*, 68(4), 1441-1472.
- Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, 53(3), 433-443.

- Oztekin, O., & Flannery, M. J. (2012). Institutional determinants of capital structure adjustment speeds. *Journal of Financial Economics*, 103(1), 88-112.
- Papaioannou, E. (2009). What drives international financial flows? Politics, institutions and other determinants. *Journal of Development Economics*, 88(2), 269-281.
- Pindado, J., Requejo, I., & Rivera, J. C. (2017). Economic forecast and corporate leverage choices: The role of the institutional environment. *International Review of Economics and Finance*, 51, 121-144.
- Qian, J., & Strahan, P. E. (2007). How laws and institutions shape financial contracts: The case of bank loans. *The Journal of Finance*, 62(6), 2803-2834.
- Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421-1460.
- Solnik, B. (1983). The relation between stock prices and inflationary expectations: The international evidence. *The Journal of Finance*, 38(1), 35-48.

## Appendix A

**Table A1:** Number of firms and developing countries (with available data)

Countries	Number of Firms
Panel A: Asian Countries	
India	795
Malaysia	728
Pakistan	93
Philippines	103
Bangladesh	10
Sri Lanka	139
Indonesia	319
Total	2187
Panel B: African Countries	
Ghana	17
Kenya	38
Nigeria	40
Tunisia	32
Zimbabwe	6
Mauritius	29
Morocco	58
Egypt	88
Jordan	115
South Africa	190
Total	613
Panel C: Latin American and Eurasia Countries	
Mexico	98
Chile	144
Brazil	188
Peru	77
Poland	339
Turkey	245
Total	1091
Overall Total	$2187 + 613 + 1091 = 3891$