

# Corruption, debt financing and corporate ownership

Debt financing  
and corporate  
ownership

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## Abstract

**Purpose** – The purpose of this paper is to examine the influence of perceived corruption on debt financing and ownership structure decisions of firms within the context of ten African countries.

**Design/methodology/approach** – The paper analyses 15-year (1996-2010) data pertaining to 556 non-financial firms drawn from ten African countries using models that link firm financing, ownership structure, and perceived corruption. It uses robust procedures including system-generalized method of moments, general least square, and Logistic (LOGIT) regression.

**Findings** – The study finds evidence that perceived corruption is important in shaping debt financing and ownership structure decisions of firms in Africa. Particularly, it finds that: first, higher levels of perceived corruption lead to firms using higher levels of short-term leverage, lower levels of long-term leverage and debts with shorter maturities and second, firms in countries with higher levels of perceived corruption respond to weaknesses in the law enforcement institutions through higher ownership concentration and controlling block shareholding.

**Research limitations/implications** – As in most empirical studies, this study focused on listed firms. Nonetheless, future studies that focus on non-listed firms could add additional insights to the extant literature.

**Practical implications** – The study provides empirical support for the argument that perceived corruption in a country distorts corporate governance. The policy implication of the findings is that governments, by taking steps that curb corruption, could enhance corporate governance by inducing firms into optimal debt financing and ownership structure decisions.

**Originality/value** – The study focuses on firms in African countries for which studies such as this are non-existent.

**Keywords** Corruption, Corporate governance, Corporate ownership, Debt financing

**Paper type** Research paper

## 1. Introduction

Separation of ownership and control is the hallmark of Berle and Means image of the modern corporation (see Chen, 2011; La Porta *et al.* 1998 (LLSV, hereafter)). And, the issue of separation of ownership and control and the agency problem arising from the separation features prominently both in the economic theory of organization and in the ongoing debate on the social significance of the modern corporation (Demsetz and Lehn, 1985) and corporate governance research (e.g. Lemmon and Lins, 2003). Over the years, several corporate governance mechanisms have emerged to limit the negative repercussions of separation of ownership and control. While some of these mechanisms are firm level or internal mechanisms – quality of auditors, quality of board of directors and its subcommittees, corporate bylaws and charters, bilateral private enforcement mechanisms, disclosure practices, ownership structure, debt financing, dividend payment, etc. – others are country level institutions, or external mechanisms – market for corporate control, external managerial labour market, regulatory and legal protections afforded to minority investors, financial institutions, media and social control, etc. (see Berglöf and Classens, 2006; Denis and McConnell, 2003; among others).



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Several studies investigate the interplay between firm-level governance mechanisms and firm-level factors such as growth opportunities, firm performance, need for external financing, etc. and countrywide factors such as the legal environment, financial, and economic development, etc. (see e.g. Doidge *et al.*, 2007, among others). Giannetti (2003) suggests that countrywide factors are particularly important in mitigating the potential agency problems that might exist between insiders and outsiders. Along similar lines, Doidge *et al.* (2007) further suggest that countrywide factors are stronger predictors of variations in quality of corporate governance than firm-specific factors especially within the context of developing countries.

In this paper, we argue that corruption – the misuse of state power by public officials for eliciting private gains (Tanzi, 1998) – which tends to be more rampant in developing countries hampers the effectiveness of countrywide institutions in enhancing corporate governance. Furthermore, it distorts the rule of law and weakens the institutional foundations (Mauro, 1995) which were meant for mitigating agency problems. Also, it reduces the efficiency of financial markets by hampering their regulation; it increases firm-level operating costs by increasing costs of obtaining licences and permits and costs of loans; and it worsens corporate governance (Kimuyu, 2007; Ng, 2006; Stulz, 2005). This view was shared by Du (2008), Chen (2011), Rose-Ackerman (2006) and Stulz (2005) who write that corruption deters public officials from facilitating contracts among private parties and enforcing property rights which in turn would hamper the development of financial markets. Rose-Ackerman (2006) concludes that the “pathologies in the agent-principal relation” are at the core of corrupt transactions.

The disruptive effect of corruption on business pursuits is also evident in survey results indicating that business persons see corruption as more dangerous threat to firm operation than terror attack. This perception is bound to affect the nature and design of firm level governance mechanisms as level of corruption forms part of the institutional context within which firms operate (see Wiseman *et al.*, 2012). There is, indeed, strong evidence in the literature that the institutional context within which firms operate exert isomorphic pressures such that firms adopt practices that are considered legitimate and socially acceptable and in line with those of similar organizations in the environment (DiMaggio and Powell, 1983). Despite this potential relationship between corruption and firm behaviour, the extant literature on the “economics of corruption” is skewed towards the investigation of the nexus between corruption and economic aggregates such as economic growth, investment/GDP ratios, foreign direct investment and public expenditure (Kimuyu, 2007; Mauro, 1995; Rose-Ackerman, 2006). Although studies of this nature would enhance our understanding of the burden of corruption on society, they do not generate information on the micro-implications of corruption and disregard potential firm-level heterogeneities. In this paper, we argue that the effect of corruption goes beyond macro-level aggregates and reaches to firm-specific governance decisions.

Studies examining the relationship between corruption and firm level decisions have been scant (Asiedu and Freeman, 2009; Svensson, 2003; Wei, 2001). In what appears to be a response to this limitation, recent literature witnessed small but growing strand of studies dealing with the link between corruption and firm level decisions. Based on Shleifer and Vishny’s (1993) notion that corruption raises operational costs, creates uncertainty, and thereby deters investment, studies by Asiedu and Freeman (2009), Batra *et al.* (2003), Gaviria (2002), and Javorcik and Wei (2009) examine the nexus between corruption and firm-level investment. In a similar spirit, Ciochimi *et al.* (2003)

show that corruption increases cost of borrowing for governments and firms in emerging markets while both Fisman (2001) and Lee and Ng (2006) study the empirical relationship between corruption variables and stock valuation. Rather recently, Chen (2011) studied the connection between corporate liquidity and corruption and concludes that corporate liquidity is lower in countries with higher control of corruption.

We decipher from the literature on firm finance that the debt-equity choice of firms is not only a decision on alternative financing instruments but also a decision on alternative forms of corporate governance mechanisms (see Gillan, 2006; Williamson, 1988). Similarly, ownership structure is another often used and very potent internal governance mechanism (see Berglöf and Classens, 2006; Gillan, 2006). In an attempt to relate the role of corruption on firm finance, Du (2008) showcases the role that the former plays on corporate ownership and financial system orientation of a country. However, Du's study did not directly investigate the implications of corruption on firm-level decisions as it focused on financial system orientation and ownership structure at country level. Furthermore, such studies based on country level aggregates create omitted-variable and aggregation biases as they do not account for firm-level heterogeneities.

More direct examinations of the role of corruption on firm finance were carried out by Fan *et al.* (2008, 2011) who demonstrate the importance of corruption in debt financing choices both in cross-country and single-country setups. Although this latter group of studies directly examine the role of corruption on firm finance, their sample was limited mostly to non-African countries. However, we note that corruption has been on the rise and has come to be identified with all government officials for almost all African nations (see Seldadyo and De Haan, 2011; Oyeshile, 2004). This has been hampering the continent's development prospects. Thus, studying the role of corruption in shaping firm-level decisions within the context of Africa is crucial in the anti-corruption campaign.

This study aims to examine the relationship between corruption, on the one hand, and firm finance and ownership patterns, on the other, by directly looking at firm-level financing and ownership variables within the context of African countries. The scientific contributions of the present study are threefold. First, to our knowledge, this is a first attempt to test the influence of corruption on debt finance and ownership patterns at firm level especially within the context of African economies. As such, it will add some insights into the literature on the distortionary role of corruption on corporate governance. Second, by using better econometric procedures – system-generalized method of moments (sys-GMM) and general least square (GLS) estimation procedures – than those employed in Du (2008), we control for data endogeneity and hence report more efficient and robust estimates. Third, the OLS regression of Du (2008) was based on corruption index data of only 1996 and 1998. The fact that we include corruption index data of much longer time series enables us to conduct richer tests to explain the relationship between variables.

Based on examination of a comprehensive set of firm-level data from ten African countries covering 15 years (i.e. from 1996 to 2010), we find evidence that corruption indeed distorts corporate governance. Particularly, we find evidence that: first, higher levels of perceived corruption induces firms into using higher levels of short-term leverage, lower levels of long term leverage and debts with shorter maturities; second, firms in countries with higher levels of perceived corruption respond to weaknesses in the law enforcement institutions through higher ownership concentration and

controlling block shareholding. These findings suggest that agency costs and institutional pressures stemming from corruption do indeed shape corporate governance decisions. Our findings also suggest that firms in sample countries use debt financing and ownership structure decisions as substitute governance mechanisms to curb weaknesses in institutions induced by corruption.

The remainder of the paper is organized as follows. Section 2 discusses the literature related to corruption, corporate governance, and firm finance. Section 3 outlines the empirical framework for the study. Section 4 presents the results and discussions while Section 5 concludes.

## 2. Literature review

Agency theory is at the core of most of the literature on corporate governance and it focuses on incentives or governance mechanisms to minimize agency costs at firm level (Heinrich, 2002). The more broadened definition of corporate governance suggests that corporate governance refers to a whole set of legal, cultural, and institutional arrangements that determine what publicly traded corporations can do, who controls them, how that control is exercised, and how the risks and returns from the activities they undertake are allocated (Blair, 1995). This definition suggests that corporate governance instruments are meant to incentivize agents to behave in a manner that ensures the interests of the principal are protected. These instruments are especially important in the context of African countries which are characterized by imperfect markets in which the interests of the agent and the principal are not necessarily aligned.

Corruption, often understood as the abuse of public office for private benefits, is viewed by most economists as “the single greatest obstacle to economic and social development”. It poses serious social and economic problems both at micro and macro levels by distorting the rule of law and weakening the institutional foundations of society. Furthermore, it is correlated with lack of political accountability and property rights protection, factors which themselves tend to be obstacles to economic growth (e.g. Aidt, 2009; Ng, 2006; Tanzi, 1998). In other words, corruption distorts the effectiveness of corporate governance mechanisms, and hence, results in sub-optimal allocation of scarce resources.

Most early studies on the “economics of corruption” focused on the macro-implications of corruption. Particularly, the literature demonstrates that corruption is associated with lower levels of investment and growth (Mauro, 1995), less foreign direct investment (Wei, 2000), and poorer quality of health care and educational services (Gupta *et al.*, 2001). However, lately, we note a small but growing strand of literature that endeavours to examine the influence of corruption on firm-level decisions. For instance, in a survey-based study that involved firms drawn from 20 countries in Latin America, Gaviria (2002) assesses the effect of corruption on firm performance and concludes that corruption substantially reduces sales growth, lowers investment and employment growth. The author also casts doubt on the notion that corruption may increase efficiency by circumventing government regulations.

In a similar vein, using firm-level data from 46 countries, Lee and Ng (2006) demonstrate that firms from more corrupt countries trade at significantly lower stock values than is the case for firms from less corrupt countries and also that corruption has a significant economic consequences for shareholder value. Likewise, Ciochini *et al.* (2003) study the relationship between corruption and the perceived likelihood that a firm or government will default on its debt and conclude that global investors require

a substantially higher risk premium when the issuer is in a more corrupt country. Rather recently, Javorcik and Wei (2009), in a study based on firm-level data drawn from 22 transition economies, examined the effect of corruption on choice of entry mode and FDI flow. The authors demonstrate that the probability of FDI taking place is negatively related to the extent of corruption and should it take place, foreign investors are more likely to take on a local joint venture partner in a corrupt host country, possibly to save the transaction costs of dealing with local government officials.

Du (2008) noted the dearth of research that addresses the relationship between corruption and corporate financing and ownership patterns. The author submits that corruption leads to higher degree of corporate ownership concentration and dominance of bank financing over equity financing. However, Du's study as pointed by himself could only lead to an indirect inference about the relationship between corruption and corporate finance patterns as the dependent variables were country level aggregates than firm-level financing decisions. Second, the lack of complete data points on the World Bank (WB) Corruption Index for the entire sample period in Du's study limited the depth of analysis. Third, the instrumental variable technique used by the author was unlikely to provide efficient estimates since it does not use all the related moment conditions and also does not account for the differenced structure of the error term (Lemma and Negash, 2013a; Antoniou *et al.*, 2006).

Fan *et al.* (2008, 2011) directly examine the nexus between corruption and firm-level finance and ownership structure. These studies respectively demonstrate the importance of corruption in determining debt financing in a single- and cross-country setups. However, their sample did not include African countries except South Africa. Studying the importance of corruption in shaping corporate finance and ownership structure within the context of less developed countries in general and Africa in particular is not only central to understanding corporate governance in developing economies but also crucial in the anti-corruption campaign as the level of corruption tends to be rising in many African countries (see Seldadyo and De Haan, 2011). This paper aims at filling this void by investigating whether the perceived corruption in Africa affects firm-level financing and ownership structure decisions.

### 2.1 Defining and measuring corruption

The literature suggests that there is no single, comprehensive, universally accepted definition of corruption (Langseth, 2006). For instance, while some definitions take a "legal" perspective, others consider corruption from a "social" perspective (Venard, 2009). Thus, it is vital that we explore the perspectives before we adopt a particular definition for the present study. Whereas corruption is described as a transgression of legal norms, from the legal perspective (Nye, 1967; Turow, 1985), it is defined as a transgression of social norms from a social perspective (Brooks, 1970; Gibbons, 1988). Yet, a third perspective that combines the previous two perspectives defines corruption as an illegal (law perspective) or improper action (social perspective) (Holmes in Bull and Newell, 2003, p. 193). Be it legal or social, Morris (1991) alludes to the fact that corruption entails "deviation from public interest". It is in tandem with this characterisation that we adopt the commonly used definition of corruption which describes corruption as "a manipulation of powers of government or sale of government property, or both by government officials for personal use or private benefit" (Shleifer and Vishny, 1993; Lambsdorff, 2007).

The foregoing definition of corruption is evidently broad and we note that researchers disaggregate the concept along four dimensions depending on the purpose of the investigation (Knack, 2007). First, a researcher may be interested in examining corruption at local, provincial, and central levels of government. Second, s/he might want to focus on the distinction between state capture and administrative corruption[1]. Third, a researcher could seek to examine corruption by distinguishing between the actors – firms, households, public officials – involved in corruption. And finally, corruption data could be disaggregated by the administrative agency or service – tax and customs, business licenses, inspections, utility connections, courts, or public education and health facilities – involved (Knack, 2007). Given that the present study's aim is to examine the influence of cross-country differences in the level of perceived corruption on firm level decision making, corruption data disaggregated at local, provincial, and central levels are not particularly helpful for our purpose. Likewise, while investigating the influence of cross-country disparity in state capture, administrative corruption, or actors (or agencies)-involved-corruption on firm level decisions could be of value, the current paper focuses on understanding the interplay between perceived corruption as an aggregate construct which comprises all its dimensions, on the one hand, and firm level financing and ownership structure decisions, on the other.

The definition of corruption is complex and contested and this makes measurement of relative levels of corruption a difficult one. The fact that indices focusing on measuring corruption have grown exponentially over the last two decades and that all of these indices are developed using varying methods and data sources offers challenging possibilities for research on corruption. Prior research classifies the various measures of corruption into three succinct clusters: internal, external, and hybrid. According to Asiedu and Freeman (2009), internal measures of corruption focus on surveys of perceptions of firms that operate within a country while external measures of corruption is based on the assessment of risk analysts who typically reside outside the country. The authors examine the merits and demerits of using internal and as external measures of corruption and submit that hybrid measures that combine corruption data from different sources into a composite index mitigate the problems associated with the other two measures of corruption. It is probably due to this advantage that hybrid measures of corruption, also known as composite indices, remain the most widely used measures of corruption. However, hybrid measures of corruption do not differentiate between various forms of corruption (Asiedu and Freeman, 2009). As the focus of the present paper is to examine the interplay between perceived levels of aggregate corruption in a country and firm financing and ownership structure decisions, we find that hybrid measures of corruption are more apt for our purpose.

Both Knack (2007) and Asiedu and Freeman (2009) point out that the Corruption Perception Index (CPI) published by Transparency International (TI) and the Control of Corruption index compiled by the WB are the two widely utilized hybrid measures of corruption. In this study, we use the WB Control of Corruption index for several reasons. First, unlike the TI's CPI which measures corruption only in the public sector as perceived by "experts" only, the WB's Control of Corruption index has the advantage of measuring corruption in the public as well as private sectors as perceived by "experts" and opinion polls (see e.g., Rohwer, 2009; UNDP, 2008). Second, the WB Control of Corruption index subsumes data from more sources compared to TI's CPI and in doing so limits the influence of measurement error in individual indicators and



potentially increases the accuracy of measuring a concept as broad as corruption (Lambdsdorff, 2005; UNDP, 2008). Third, the WB Control of Corruption index weighs available data sources differently based on their importance in contrast to the equal weighting each data sources in TI's CPI (Knack, 2007). Finally, WB improves on the treatment of statistical uncertainty in TI by providing "standard error" as an indicator of uncertainty accompanying each point estimate (Knack, 2007). The original WB Control of Corruption index measures the degree of control of corruption. We rescale the variable by subtracting the original WB score from 2.5 so that a higher value implies more corruption.

## 2.2 Corruption and debt-financing decisions

The literature generally invokes institutional and agency theories to examine the influence of corruption on firm level decisions. According to institutional theorists, the principal-agent (P-A) contracts between insiders and outsiders are socially embedded such that differences in the institutional social context surrounding the relationship can affect the nature of moral hazard, the form of governance that is used, and even the goals that agents and principals seek (Hoskisson *et al.*, 2000). This argument is consistent with conjectures forwarded by traditional agency theorists. Thus, in this paper, we contend that corruption in a given country forms part of the institutional context that determines firm behaviour and also affects the agency costs incurred in P-A relations. In countries marred with corruption where contract enforcement is compromised and regulation of capital markets is inefficient, firms are likely to use debt instruments which provide little room for managerial opportunism than equity instruments which tend to allow for much greater discretion to entrenched managers (see Williamson, 1988). This occurs because in countries with severe corruption, the ability of enforcement institutions to curb managers from engaging in opportunistic behaviour tends to be weaker, and hence, firms in such environment are likely to use debt instruments which restrict managerial opportunism through covenants and other restrictions on firm's free cash flow.

The forgoing argument has empirical validity. Chen (2011) and Du (2008) find that corruption weakens enforceability of laws which in turn hampers regulation of capital markets and disrupts the efficiency of legal institutions. Similarly, Fan *et al.* (2011) underscore the importance of enforceability of contracts in debt-equity choice of firms. In an environment where law enforcement is relatively weak, firms tend to use debt than equity. This is because the covenants in debt contracts limit the potential for expropriation of outsiders' property rights by insiders' (Fan *et al.*, 2008, 2011; Smith and Warner, 1979). Thus, we hypothesize that:

- H1. Firms in countries with higher level of perceived corruption tend to raise finance through debt than equity.

In his presidential address to the American Finance Association meeting, Diamond (2004) raises an important question: How should financial contracts be structured when contract enforcement is ineffective and costly? Enforcement costs reduce the amount that lenders can recover when firms default, and hence, in legal systems in which enforcement costs are high, lenders may become reluctant to go to courts after a borrower defaults because they will be worse off if they enforce their contracts *ex post*. Mitchell (1993) describes this as a problem of "lender passivity". In the presence of lender passivity, it is unlikely that debtors would commit to behave. On the other hand, as was stated earlier, corruption

hampers effectiveness of legal institutions, and thus, leads to ineffective or expensive contract enforcement. It follows that lenders in countries marred with corruption may be worse off if they enforce contracts *ex post*. This could lead to a complete collapse of markets for external finance in countries marred with corruption.

Given the potential negative consequences that can arise from lender passivity, Diamond (2004) contends that lender enforcement can be induced by structuring debt as short term. The author argues that bad news in the presence of short-term debt can result in externalities that lead to “firm runs” and that this threat of a run in turn provides *ex ante* incentives for lenders to enforce their contracts. In the same vein, borrowers will be willing to pay the lender in full to preserve their private benefits. Note that payment will come at the expense of the long-term lender. Anticipating this, as in a prisoner’s dilemma, both lenders will want to lend short-term and retain the ability to withdraw financing first (Diamond, 2004). In equilibrium, the firm will end up borrowing short-term debt from multiple lenders. Thus, other things being equal, in environments marred with corruption where enforcement costs are high, short-term debt can serve as an incentive for lenders to enforce their claims and also provide costly *ex post* punishment to borrowers, and thus provide beneficial *ex ante* incentives to borrowers. Thus, we posit the following hypothesis:

- H2. Firms in countries with higher level of perceived corruption tend to use short-term debt than long-term debt finance.

### 2.3 Corruption and ownership structure

In this paper, we argue that corruption – as one of the institutional contexts surrounding corporate decisions – has a bearing on corporate ownership structure decisions in several ways. First, in countries marred with corruption where contract enforcement is compromised and regulation of capital markets is inefficient, minority shareholders will have no incentives to allocate financial resources on capital markets. This would, in turn, lead to high concentration of ownership of publicly listed firms in a few majority owners (Dyck and Zingales, 2004; Nenova, 2003). This occurs because in countries with severe corruption, the enforcement institutions’ ability to limit insiders’ benefit of private control tends to be weaker, and hence, minority interest are less likely to be protected from expropriation by insiders.

Second, in countries with severe corruption, large shareholders are mechanisms to solve agency problems as they are capable and have the incentives to monitor insiders. Third, in corrupt environments where there are uncertainties about property rights and where there is lack of institutions that fairly arbitrate economic disputes, a large shareholder may have the incentive to increase its control position to strengthen its power toward other economic agents such as banks and government as so doing would increase the shareholder’s opportunities for economic payoffs. For example, Young *et al.* (2008) suggest that in an environment where institutions are weak, large shareholders tend to use relational ties, government contacts, and other informal mechanisms to achieve their interests. Fourth, corruption leads to instability in business environment, and in such an environment, managerial behaviour becomes more crucial in affecting firm performance and shareholders’ monitoring has a role to ensure that managers are following and prepared to deal with external conditions. Therefore, the larger the uncertainty of the firm’s environment, the higher the owners’



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profit potential from exercising control; and this owner's uncertainty should lead to a preference for more concentrated ownership. Thus, we hypothesize that:

- H3. Firms in countries with higher levels of perceived corruption tend to have more concentrated ownership than those in less corrupt countries.
- H4. Firms countries with higher levels of perceived corruption are more likely to have controlling shareholders than those in less corrupt countries.

### 3. Empirical framework

#### 3.1 *The sample and data*

The present study focuses on firms in ten selected countries in Africa including Botswana, Egypt, Ghana, Kenya, Mauritius, Morocco, Nigeria, South Africa, Tunisia, and Zambia. The choice of these countries was motivated by four factors. First, they are all in Africa where the literature on the role of corruption on firm-level financing decisions and ownership patterns is virtually non-existent. Second, national institutions and macroeconomic conditions vary markedly across African countries. This diversity offers a good prospect for assessing the role of corruption on firm finance and governance. Third, the lack of well-developed markets for corporate control that epitomize emerging markets (e.g. Shleifer, 1998) is even more so in African countries. These deficiencies of the external governance mechanisms offer an interesting opportunity to investigate whether corruption plays an important role in corporate governance. Fourth, the literature notes that corruption is on the rise in the African continent and thus a better insight into the role of corruption on firm finance and governance decisions is of vital interest to the investment community, policy setters, and other stakeholders.

The firm-specific data used in this study were extracted from the financial statements of listed firms in the sample countries which were sourced from OSIRIS database of Bureau DIJK that maintains a comprehensive financial database of over 70,000 companies across the globe. We started with all the firms listed in all of the functioning stock exchanges on the African continent that had data in the OSIRIS database as at February 2012. We required that firms in our sample should have at least three consecutive years of available data over the study period and countries should have at least ten firms. We dropped firms in the financial industry (US SIC code 6000~) as debt financing and ownership structure decisions of firms in this industry tend to be governed by special regulatory regimes unique to the industry. The final data set comprised of 15-years (1996-2010) data pertaining to 556 non-financial firms drawn from ten African countries. We adjust differences in fiscal years of firms in the sample to provide a more accurate empirical work. Hence, if the date of preparation of financial statements for a firm is on or before June 30, its year was stamped as one-year prior to its fiscal year and if a firm's fiscal year is after June 30, that same year was stamped as the firm's fiscal years. Data on country specific variables were collected from the WB's web site.

#### 3.2 *Model specification and estimation*

Our first empirical question is to assess whether the degree of corruption in a country impacts on firm-level debt financing decisions. To assess this, based on a comprehensive survey of the extant literature, we specify a range of models that define the aforementioned relationships. Mindful of the fact that alternative theories on firm

financing tend to have different implications for different measures of firm financing patterns, we use five closely related but different proxies for firm financing decisions: total leverage; debt-to-equity; short-term leverage, long-term leverage and debt maturity ratios (see Frank and Goyal, 2009; Lemma and Negash, 2011, 2012, 2013a, b; Titman and Wessels, 1988). The following model was used to assess the relationship between corruption and debt-financing decisions at firm level (i.e. *H1* and *H2*):

$$LEV_{i,t} = \beta_0 + X_{i,t}^f \beta_f + X_t^c \beta_c + v_i + \varepsilon_i \quad (1)$$

where  $LEV_{i,t}$  denotes either of the five measures of debt-financing decision of firm  $i$  at time  $t$ ;  $X_{i,t}^f$  denotes a vector of firm-level control variables including firm size, growth opportunity, firm profitability, earnings volatility, asset tangibility/maturity and non-debt-related tax-shield and  $\beta_f$  is a column vector containing the corresponding coefficients;  $X_t^c$  refers to a vector of the corruption variable and other country-level control variables including financial institutions, size of economy and its growth and  $\beta_c$  is a column vector containing the corresponding coefficients. Note that when firm-specific variables are used to explain debt financing decisions,  $X_{i,t}^f$  has both time and cross-sectional dimensions. In contrast, in the case of country-level variables,  $X_t^c$  has only time dimension as country-level variables do not vary across firms. The exact definition of variables included in Equation 1 is presented in the explanatory notes accompanying Table II. Our decision to include the aforementioned firm- and country-level control variables was motivated by the extensive literature on the determinants of basic capital structure and debt maturity choices (see Frank and Goyal, 2009; Harris and Raviv, 1991; Lemma, 2012; Lemma and Negash, 2011, 2012, 2013a, b, 2014).

Our second empirical question is to assess if corporate ownership patterns are impacted by the degree of perceived corruption in a country. To establish this, based on a thorough review of the extant literature, we specify a battery of models that define the relationships. We identify two approaches to measuring corporate ownership patterns. The first approach attempts to measure the percentage of shares owned by the top shareholder(s). The second approach attempts to measure the presence (or absence) of a block shareholder by using a dummy value of 1 if the percentage of shares owned by a specified number of shareholders exceeds a specified threshold (see Demsetz and Lehn, 1985; Elst, 2004; La Porta *et al.*, 1999; LLSV, 2000). The exact definition of measures of corporate ownership patterns is presented in the explanatory notes accompanying Tables V and VI. Due to differences in the nature of data generated by these approaches, we specify two separate models: one explaining ownership concentration (i.e. Equation 2), the other explaining the presence (or absence) of block shareholder (i.e. Equation 3):

$$CON_{i,t} = \beta_0 + Z_{i,t}^a \beta_a + Z_{i,t}^b \beta_b + v_i + \varepsilon_i \quad (2)$$

$$P(\text{Blockholder} = 1 | Z) = \frac{\exp(Z\beta)}{1 + \exp(Z\beta)} \quad (3)$$

where  $CON_{i,t}$  denotes ownership concentration of a firm as measured by the percentage of shares owned by the top shareholder(s) of a firm;  $Z_{i,t}^a$  denotes a vector of firm-level control variables (i.e. total leverage ratio, long-term leverage, dividend payments, investments, institutional investor dummy, firm size, firm age, growth

opportunity, firm profitability, regulated industry dummy and earnings volatility), and  $\beta_f$  is a column vector containing the corresponding coefficients;  $Z_{i,t}^b$  refers to a vector of the corruption variable and other country-level control variables (i.e. rule of law, natural logarithm of GDP per capita and financial sector development) and  $\beta_b$  is a column vector containing the corresponding coefficients; and  $P(\text{Blockholder} = 1|Z)$  is the probability that a blockholder is present conditioned on the realization of  $Z$ , where  $Z$  represents a vector of explanatory variables and  $\beta$  is the corresponding coefficient vector. As in Equation 1, note in Equations 2 and 3 that when firm-specific variables are used to explain debt financing decisions,  $X_{i,t}^f$  has both time and cross-sectional dimensions. In contrast, in the case of country-level variables,  $X_t^c$  has only time dimension as country-level variables do not vary across firms. Also, due to data availability, we had to limit ownership pattern data to the cross-sectional data available on the OSRIS database as at February 2012.

Du (2008) utilizes pooled OLS for analysing the nexus between corruption and finance. However, pooled OLS imposes the most restrictive model on the panel data as it assumes that all the coefficients are constant across individual firms and time (Gujarati, 2003, p. 641). Hence, John (2008, p. 234) remarks that pooled OLS, in fact, is no different from cross-sectional OLS except that it acknowledges the existence of repeated measures. Albiert makes no attempt to model the repeated observations. Thus, pooled OLS produces consistent but understated standard errors and inefficient estimates (Johnston and DiNardo, 1997). Even though one could employ either fixed effects (FE) or random effects regression procedures to overcome heteroskedasticity and unobserved variable effects that pooled OLS fails to address, the latter procedures fail to address data endogeneity issues.

To overcome the problems of endogeneity, Anderson and Hsiao (1982) propose the use of instrumental variables (IV) technique in which two-period lagged dependent variables are used as instrument. However, Antoniou *et al.* (2006, 2008) note that this procedure is unlikely to provide efficient estimates since it does not use all the related moment conditions and also does not account for the differenced structure of the error term. Arellano and Bond (1991) (AB hereafter) suggest using a dynamic panel data estimator based on the generalized method of moment (GMM) methodology that optimally exploits the linear moment restrictions implied by the dynamic panel model to rectify problems of the IV technique. AB's methodology uses as instruments both lagged values of all endogenous regressors and lagged and current values of all strictly exogenous regressors. It estimates equations using the levels or the first differences of the variables.

Blundell and Bond (1998), in contrast, argue that lagged levels of variables are likely to be weak instruments for current differenced variables when the series are close to random walk. In these conditions, the differenced GMM estimates are likely to be biased and inefficient. They suggest the more efficient sys-GMM estimator that combines the difference equation and levels equation in which suitably lagged differenced variables are the appropriate instruments. Sys-GMM is consistent and more efficient than the difference estimator so long as there is no significant correlation between the differenced regressors and country FE. Hence, we use the sys-GMM to obtain the parameter estimates for Equation 1.

The cross-sectional nature of ownership data in the OSIRIS database restricted us from using panel data procedures for Equation 2. Thus, we find that GLS is the most apt procedure to estimate the equation as it handles problems of heteroskedasticity. In Equation 3, our aim is to examine the relationship between presence (absence) of

block shareholding (a dichotomous variable) and a set of firm and country level variables. The literature suggests two types of probability distributions that can be employed in the examination of such relationships – probit distribution and the logistic distribution. The difference between the two functions show up in the tails of the distributions with the probit distribution approaching the axes faster than the logistic distribution does. The logistic approximation is usually preferred over probit given its convenient mathematical properties (e.g. Peng *et al.*, 2002a; Bagley *et al.*, 2001; Peng *et al.*, 2002b; Cabrera, 1994). Thus, we use the logistic regression to examine the relationship represented in Equation 3.

## 4. Results and discussions

### 4.1 Descriptive statistics

**4.1.1 The sample.** We report the sample coverage by country (see Table I). The representativeness of the sample firms varies across countries. In some countries almost 65 per cent of listed firms (e.g. Kenya, South Africa, and Zambia) are included in our sample while in others only 27 per cent of the total listed firms (i.e. Egypt and Morocco) are included. Furthermore, firms from South Africa and Nigeria may heavily influence the sample; they constitute *circa* 59 per cent of firms included in the sample. On the other hand, those from Botswana and Zambia may have little impact on the sample as they constitute only 4 per cent of firms included in the sample. While the level of coverage of our sample within a country may reflect the fact that OSIRIS has uneven coverage of firms, our results should be interpreted with the understanding that firms listed in stock exchanges tend to be larger companies in an economy.

**4.1.2 Preliminary results.** As alluded to earlier, five alternative measures of corporate debt-financing decisions are employed in this study. The descriptive statistics reported in Table II shows that there is, indeed, heterogeneity in debt-financing practices of firms across the sample countries. For instance, we observe that total leverage ranges from a low of 17.1 per cent to a high of 77.4 per cent while the average (median value) is 49.8 per cent. We note similar disparities in the other measures of debt-financing practices of sample firms. Also, the results show that the heterogeneity is both within and between countries suggesting that both firm and

| Country      | Number of firms in the sample | Number of firms in the sample/total number of firms listed | % of firms in the sample |
|--------------|-------------------------------|--|--------------------------|
| Botswana     | 10                            | 0.48   | 1.80                     |
| Ghana        | 19                            | 0.54   | 3.42                     |
| Kenya        | 36                            | 0.65   | 6.47                     |
| Mauritius    | 50                            | 0.58   | 8.99                     |
| Morocco      | 20                            | 0.27   | 3.60                     |
| Nigeria      | 97                            | 0.45   | 17.44                    |
| South Africa | 231                           | 0.64   | 41.55                    |
| Tunisia      | 26                            | 0.46   | 4.68                     |
| Zambia       | 12                            | 0.63   | 2.16                     |
| Egypt        | 55                            | 0.26   | 9.89                     |
| Total        | 556                           | N/A  | 100.00                   |

**Table I.**  
The composition  
of the sample

**Notes:** The table presents a description of the sample. The total number of firms listed refers to the number of firms listed in national stock exchanges as at December 2010

**Source:** World Development Indicators

| Country      | Total Lev | Debt to equity | Short-term Lev. | Long-term Lev. | Debt Matur. | CON_1 size | Firm size | Earning Volatil. | Firm Profit. | Growth Opportu. | Asset Matur. | Asset Tang. | Tax shield | Corrupt. | Financial Institute. | Size of the Economy | Economic growth | Firm Age | Dividend payout | Firm level Invest. |
|--------------|-----------|----------------|-----------------|----------------|-------------|------------|-----------|------------------|--------------|-----------------|--------------|-------------|------------|----------|----------------------|---------------------|-----------------|----------|-----------------|--------------------|
| Botswana     | 0.375     | 0.215          | 0.241           | 0.086          | 0.222       | 23.630     | 11.361    | 0.204            | 0.111        | 0.103           | 2.582        | 0.236       | 0.024      | 1.603    | -0.055               | 8.607               | 3.545           | 2.565    | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | 19.000     | 9.318     | -3.795           | 0.000        | -1.819          | 0.120        | 0.032       | 0.002      | 1.245    | -0.055               | 8.027               | -6.220          | 2.693    | 0.000           | 0.000              |
|              | 0.732     | 0.966          | 0.660           | 0.465          | 0.788       | 35.000     | 14.459    | 3.197            | 0.251        | 2.671           | 12.795       | 0.827       | 0.100      | 3.475    | -0.055               | 8.910               | 8.290           | 2.773    | 0.141           | 0.398              |
| Ghana        | 0.538     | 0.434          | 0.414           | 0.042          | 0.089       | 24.900     | 10.133    | 0.292            | 0.111        | 0.213           | 3.944        | 0.431       | 0.036      | 2.520    | 0.543                | 6.989               | 3.360           | 2.773    | 0.000           | 0.000              |
|              | 0.171     | 0.036          | 0.081           | 0.000          | 0.000       | 10.000     | 4.963     | -3.540           | 0.000        | -6.837          | 0.120        | 0.041       | 0.007      | 2.411    | 0.543                | 5.560               | 0.000           | 1.609    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | 58.800     | 14.456    | 3.546            | 0.251        | 1.568           | 12.795       | 0.827       | 0.100      | 2.874    | 0.543                | 7.157               | 5.860           | 3.091    | 0.417           | 0.476              |
| Kenya        | 0.467     | 0.534          | 0.286           | 0.170          | 0.429       | 27.545     | 15.079    | 0.181            | 0.097        | 0.111           | 3.780        | 0.365       | 0.032      | 3.452    | -0.107               | 6.423               | 2.390           | 2.708    | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | 10.000     | 9.306     | -2.029           | 0.000        | -1.467          | 0.120        | 0.032       | 0.002      | 3.307    | -0.107               | 5.990               | -2.140          | 0.693    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | 58.800     | 18.717    | 2.752            | 0.251        | 1.237           | 12.795       | 0.827       | 0.100      | 3.555    | -0.107               | 6.660               | 4.310           | 3.178    | 0.257           | 0.554              |
| Mauritius    | 0.479     | 0.407          | 0.266           | 0.164          | 0.368       | -          | 13.799    | 0.666            | 0.069        | 0.096           | 5.460        | 0.536       | 0.030      | 1.927    | -0.081               | 8.555               | 3.140           | 2.944    | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | -          | 9.711     | -4.913           | 0.000        | -0.751          | 0.120        | 0.032       | 0.002      | 1.824    | -0.081               | 8.187               | 0.440           | 0.693    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | -          | 16.598    | 4.445            | 0.251        | 3.453           | 12.795       | 0.827       | 0.100      | 2.161    | -0.081               | 8.936               | 7.960           | 3.135    | 0.224           | 0.398              |
| Morocco      | 0.437     | 0.090          | 0.313           | 0.044          | 0.145       | -          | 13.432    | 0.119            | 0.086        | 0.071           | 2.043        | 0.294       | 0.035      | 2.711    | -0.197               | 7.566               | 3.640           | -        | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | -          | 8.557     | -4.371           | 0.000        | -1.044          | 0.120        | 0.032       | 0.002      | 2.094    | -0.197               | 7.085               | -3.600          | -        | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | -          | 17.270    | 2.945            | 0.251        | 1.598           | 12.795       | 0.825       | 0.100      | 2.901    | -0.197               | 7.947               | 10.580          | -        | 0.144           | 0.329              |
| Nigeria      | 0.511     | 0.437          | 0.481           | 0.061          | 0.173       | -          | 14.946    | 0.188            | 0.106        | 0.159           | 3.913        | 0.490       | 0.037      | 3.597    | -0.198               | 6.468               | 3.390           | -        | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | -          | 6.973     | -6.737           | 0.000        | -8.912          | 0.120        | 0.032       | 0.002      | 2.500    | -0.198               | 5.607               | -1.240          | -        | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | -          | 19.753    | 3.954            | 0.251        | 6.143           | 12.795       | 0.827       | 0.100      | 3.822    | -0.198               | 7.226               | 7.890           | -        | 0.821           | 0.735              |
| South Africa | 0.513     | 0.263          | 0.327           | 0.131          | 0.290       | 24.010     | 13.995    | 0.188            | 0.109        | 0.117           | 1.553        | 0.238       | 0.029      | 2.109    | 0.555                | 8.563               | 1.650           | 2.639    | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | 10.000     | 2.197     | -4.202           | 0.000        | -6.983          | 0.120        | 0.032       | 0.002      | 1.741    | 0.555                | 7.800               | -2.730          | 0.693    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | 58.800     | 19.132    | 3.961            | 0.251        | 9.728           | 12.795       | 0.827       | 0.100      | 2.500    | 0.555                | 8.892               | 4.430           | 3.434    | 0.294           | 0.820              |
| Tunisia      | 0.480     | 0.324          | 0.303           | 0.110          | 0.247       | 39.100     | 10.736    | 0.041            | 0.081        | 0.064           | 1.815        | 0.332       | 0.060      | 2.560    | -0.222               | 8.077               | 3.470           | 2.773    | 0.000           | 0.000              |
|              | 0.171     | 0.035          | 0.081           | 0.000          | 0.000       | 19.740     | 8.066     | -2.113           | 0.000        | -0.981          | 0.120        | 0.032       | 0.002      | 1.951    | -0.222               | 7.717               | 0.570           | 1.609    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.744       | 58.800     | 14.037    | 1.853            | 0.230        | 1.048           | 12.795       | 0.764       | 0.100      | 2.683    | -0.222               | 8.377               | 5.250           | 3.091    | 0.313           | 0.387              |
| Zambia       | 0.555     | 0.367          | 0.389           | 0.104          | 0.276       | -          | 18.920    | 0.134            | 0.164        | 0.162           | 4.632        | 0.516       | 0.044      | 3.146    | -                    | 6.839               | 3.245           | 2.197    | 0.000           | 0.003              |
|              | 0.204     | 0.035          | 0.119           | 0.000          | 0.000       | -          | 11.698    | -2.383           | 0.000        | -2.023          | 0.120        | 0.045       | 0.008      | 2.972    | -                    | 5.851               | 0.950           | 1.386    | 0.000           | 0.000              |
|              | 0.774     | 0.966          | 0.734           | 0.465          | 0.788       | -          | 20.641    | 4.685            | 0.251        | 0.705           | 12.795       | 0.827       | 0.100      | 3.446    | -                    | 7.133               | 5.920           | 2.890    | 0.183           | 0.423              |

(continued)

Debt financing and corporate ownership

Table II. Descriptive statistics

Table II.

| Country | Total Lev | Debt to- equity | Short- term Lev | Long- term Lev | Debt Matur. | CON_1  | Firm size | Earning Volatil. | Firm Profit. | Growth Opportu. | Asset Matur. | Asset Tang. | Asset Tang. | Tax shield | Corrupt. | Financial Institute. | Size of the Economy | Economic growth | Firm Age | Dividend payout | Firm level Invest. |
|---------|-----------|-----------------|-----------------|----------------|-------------|--------|-----------|------------------|--------------|-----------------|--------------|-------------|-------------|------------|----------|----------------------|---------------------|-----------------|----------|-----------------|--------------------|
| Egypt   | 0.455     | 0.235           | 0.343           | 0.030          | 0.081       | 51.160 | 12.381    | 0.104            | 0.112        | 0.101           | 3.745        | 0.364       | 0.023       | 3.032      | -0.235   | 7.260                | 2.860               | 2.833           | 0.000    | 0.000           | 0.000              |
|         | 0.171     | 0.035           | 0.081           | 0.000          | 0.000       | 10.000 | 4.094     | -4.643           | 0.000        | -6.972          | 0.120        | 0.032       | 0.002       | 2.500      | -0.235   | 6.977                | 0.000               | 0.000           | 0.000    | 0.000           | 0.000              |
|         | 0.774     | 0.966           | 0.734           | 0.465          | 0.788       | 58.800 | 16.149    | 4.568            | 0.251        | 6.799           | 12.795       | 0.827       | 0.100       | 3.214      | -0.235   | 7.900                | 5.270               | 2.996           | 0.529    | 0.840           | 0.840              |
| Total   | 0.498     | 0.273           | 0.336           | 0.104          | 0.243       | 26.780 | 13.743    | 0.157            | 0.104        | 0.114           | 2.533        | 0.327       | 0.031       | 2.387      | 0.543    | 8.013                | 2.560               | 2.708           | 0.000    | 0.000           | 0.000              |
|         | 0.171     | 0.035           | 0.081           | 0.000          | 0.000       | 10.000 | 2.197     | -6.737           | 0.000        | -8.912          | 0.120        | 0.032       | 0.002       | 1.245      | -0.235   | 5.560                | -6.220              | 0.000           | 0.000    | 0.000           | 0.000              |
|         | 0.774     | 0.966           | 0.734           | 0.465          | 0.788       | 58.800 | 20.641    | 4.685            | 0.251        | 9.728           | 12.795       | 0.827       | 0.100       | 3.822      | 0.555    | 8.936                | 10.580              | 3.434           | 0.821    | 0.840           | 0.840              |

**Notes:** Total Lev. refers to a measure of debt financing (total-leverage) and is computed as the average of the ratio of loans and long-term debt to shareholders funds; Short-term Lev. refers to a measure of short-term debt financing and is computed as the average of the ratio of current liabilities to total assets; long-term Lev. denotes a measure of long-term debt financing and is measured as the average of the ratio of non-current liabilities to total assets; and Debt Matur. refers to a measure of debt maturity structure of a firm and is calculated as the average of the ratio of non-current liabilities to total liabilities. CON\_1 refers to measure of ownership concentration and is computed as the average of the percentage of direct shares owned by the largest shareholder of a firm. Firm size refers to the average of the natural logarithm of annual sales of a firm. Earning Volatil. refers to a measure of business risk and is computed as the average of absolute value of first difference of the natural logarithm of profit after tax of a firm. Profit. refers to a measure of firm profitability and is calculated as the average of ratio earnings before interest and tax to total assets of a firm. Growth Opportu. refers to a measure of firm-level growth opportunities and is calculated as the average of first difference of log of sales. Asset Matur. refers to a measure of the asset maturity structure of a firm and is computed as the average of ratio of tangible fixed asset to total assets times the ratio of tangible fixed assets to depreciation, amortization, and depletion. Asset Tang. refers to a measure of the nature of the assets of a firm and is computed as the average of ratio of tangible fixed assets to total assets. Tax Shield refers to a measure of non-debt-related tax-shield of a firm and is calculated as the average of ratio of depreciation, amortization, and depletion to total assets. Corrupt. refers to a measure of the severity of corruption in a country and is computed as the average of the reverse of "control of corruption" governance index constructed by the World Bank. The higher the values indicate that a country is severely corrupted. Financial Institute. refers to a measure of the orientation of a county's financial system and is computed as the average of an aggregate financial structure index constructed by Levine (2002). Higher values indicate a more market-based financial system. Size of the economy is measured by the average of the natural logarithm of GDP per capita in \$US from the World Development Indicators. Economic Growth is measured by the average of real GDP per capita growth rate from the World Development Indicators. Firm Age refers to the average of the natural logarithm of the number of years since a firm floated its first IPO. Dividend payout refers to the dividend policy of a firm and is measured by the average of the ratio of cash dividend paid to total assets. Firm level investment is measured by average of the ratio of sum of the annual change in tangible fixed assets and depreciation, depletion, amortization and impairment to total asset. The figures in the first rows refer to the median values whereas those in the second and third rows refer to the minimum and maximum values



country factors potentially influence debt-financing decisions of firms in our sample. Overall, the cross-country and within country diversity in debt-financing decisions of sample firms that we observe in the preliminary statistics might be related to the disparity in corporate governance challenges facing firms across the sample countries.

Table II also reveals that firms in our sample exhibit disparity in ownership patterns. For instance, the average percentage of direct shares owned by the largest shareholder spans from a low of 10.0 per cent to a high of 58.8 per cent. The wide gap between the minimum and maximum ownership concentration figures within each country suggests the existence of within country variation in ownership concentration of firms. In unreported results, we observe that the percentage of firms with a controlling shareholder is the highest in Tunisia (i.e. 86.6 per cent of the sample firms from Tunisia have controlling shareholders) while it is the lowest in South Africa (i.e. 57.3 per cent of the sample firms from South Africa have controlling shareholders)[2]. This figures show the disparity in prevalence (or lack thereof) of widely owned firms across the African continent. As in the debt-financing decisions, we conjecture that the cross-country and within country differences in ownership patterns could be attributable to differences in agency problems that sample firms have to deal with.

The results in Table II also show within and between country diversity in the characteristics of firms included in the sample. Firms in Zambia provided the highest return on assets while those in Mauritius provided the lowest. Firms in Ghana had the most volatile earnings while they experienced the most growth opportunities. On the other hand, Mauritius and Zambia have firms that had assets with the highest tangibility and longest maturities while Botswana, South Africa, and Tunisia have firms with the lowest tangibility and shortest maturities.

We observe that the sample countries exhibit divergence in terms of perceived corruption as evidenced by widely varying Control of Corruption index (which ranged from a low of 1.245 to a high of 3.822). We note that Nigeria and Kenya were perceived to have the most severe corruption while Botswana was perceived to have the least severe corruption during the sample period. Furthermore, we note that the perceived level of corruption was slightly lower for our sample countries compared to those reported for sub-Saharan Africa in Asiedu and Freeman (2009). However, they were slightly higher than those reported in Du (2008). In terms of macroeconomic conditions, Botswana has the highest GDP per capita and its growth during the sample period.

#### 4.2 Correlation analysis

To gain a further insight into how basic debt-financing and ownership pattern decisions are correlated with firm and country characteristics, we compute Pearson's correlation coefficients between variables. The results in Table III, consistent with financial theory, suggest that firm-specific factors, legal and financial institutions and economic environment potentially influence firm-level debt-financing and ownership structure decisions. In particular, such firm-specific factors as firm size, number of years a firm is listed, non-debt-related tax-shield, and dividend payout ratio are associated with higher levels of leverage ratios and greater use of long-term rather than short-term debt. On the contrary, as expected, firm profitability is associated with lower levels of leverage ratios. In addition, ownership concentration is negatively correlated with leverage ratios while it is positively correlated with firm size, profitability, non-debt-related tax-shield, number of years a firm is listed, firm level investment, and debt maturity structure.

**Table III.**  
Pairwise  
correlation matrix

| Total<br>Lev. | Debt-<br>to-<br>Equity | Short-<br>term<br>Lev. | Long-<br>term<br>Lev. | Debt<br>Matur. | Firm<br>Size | Firm<br>Volatil. | Earn'gs<br>Profit. | Firm<br>Oppr. | Asset<br>Maturi | Asset<br>Tangib. | Tax<br>Shield | Corrupt. | Financial<br>Institutm. | Size of the<br>Econo. | Econo.<br>growth | Dividend<br>Payout | Firm level<br>investment | Firm<br>age | Con_1 |  |
|---------------|------------------------|------------------------|-----------------------|----------------|--------------|------------------|--------------------|---------------|-----------------|------------------|---------------|----------|-------------------------|-----------------------|------------------|--------------------|--------------------------|-------------|-------|--|
| (1)           | (2)                    | (3)                    | (4)                   | (5)            | (6)          | (7)              | (8)                | (9)           | (10)            | (11)             | (12)          | (13)     | (14)                    | (15)                  | (16)             | (18)               | (19)                     | (20)        | (21)  |  |
| 1.00          |                        |                        |                       |                |              |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (2) 0.59*     | 1.00                   |                        |                       |                |              |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (3) 0.73*     | 0.04*                  | 1.00                   |                       |                |              |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (4) 0.46*     | 0.65*                  | -0.25*                 | 1.00                  |                |              |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (5) 0.03*     | 0.41*                  | -0.54*                 | 0.83*                 | 1.00           |              |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (6) 0.19*     | 0.05*                  | 0.13*                  | 0.14*                 | 0.13*          | 1.00         |                  |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (7) 0.01      | -0.02                  | 0.01                   | 0.01                  | -0.01          | 0.05         | 1.00             |                    |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (8) -0.18*    | -0.18*                 | -0.06*                 | -0.17*                | -0.10*         | 0.21*        | 0.26*            | 1.00               |               |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (9) 0.04*     | -0.03                  | 0.04*                  | -0.01                 | -0.03*         | 0.13*        | 0.31*            | 0.14*              | 1.00          |                 |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (10) -0.05    | 0.21*                  | -0.30*                 | 0.32*                 | 0.39*          | 0.06*        | -0.01            | -0.12*             | -0.01         | 1.00            |                  |               |          |                         |                       |                  |                    |                          |             |       |  |
| (11) -0.13*   | 0.23*                  | -0.28*                 | 0.28*                 | 0.41*          | 0.09*        | -0.02            | -0.07*             | -0.02         | 0.80*           | 1.00             |               |          |                         |                       |                  |                    |                          |             |       |  |
| (12) 0.08*    | 0.11*                  | 0.01                   | 0.14*                 | 0.10*          | 0.06*        | -0.02            | 0.05*              | -0.01         | -0.05*          | 0.39*            | 1.00          |          |                         |                       |                  |                    |                          |             |       |  |
| (13) -0.04*   | 0.08*                  | 0.16*                  | -0.14*                | -0.09*         | 0.17*        | -0.02            | 0.02               | -0.01         | 0.18*           | 0.23*            | 0.02          | 1.00     |                         |                       |                  |                    |                          |             |       |  |
| (14) 0.11*    | -0.02                  | -0.06*                 | 0.15*                 | 0.09*          | 0.03*        | 0.02             | 0.06*              | 0.01          | -0.17*          | -0.25*           | -0.04*        | -0.68*   | 1.00                    |                       |                  |                    |                          |             |       |  |
| (15) 0.08*    | -0.06*                 | -0.18*                 | 0.17*                 | 0.10           | -0.09*       | -0.02            | -0.03*             | 0.01          | -0.18*          | -0.29*           | -0.07*        | -0.82*   | 0.61*                   | 1.00                  |                  |                    |                          |             |       |  |
| (16) 0.09*    | 0.01                   | 0.08*                  | -0.03                 | -0.11*         | -0.03*       | 0.07*            | 0.06*              | 0.07*         | 0.04*           | -0.03*           | -0.01*        | 0.15*    | -0.26*                  | -0.02                 | 1.00             |                    |                          |             |       |  |
| (17) -0.03*   | -0.08*                 | -0.21*                 | 0.10*                 | 0.06*          | -0.26*       | -0.02            | -0.04*             | -0.01         | -0.11*          | -0.16*           | -0.05*        | -0.84*   | 0.35*                   | -0.08*                | -0.08*           | 1.00               |                          |             |       |  |
| (18) 0.15*    | 0.29*                  | 0.08*                  | 0.12*                 | 0.06*          | -0.02*       | 0.07*            | -0.09*             | 0.03*         | 0.19*           | 0.11*            | -0.04*        | 0.12*    | -0.05                   | -0.13*                | 0.09*            | 1.00               |                          |             |       |  |
| (19) 0.02     | 0.12*                  | -0.09*                 | 0.14*                 | 0.16*          | -0.01        | 0.06*            | -0.05*             | 0.15*         | 0.46*           | 0.35*            | -0.10*        | 0.06*    | -0.04*                  | -0.06*                | 0.06*            | 0.34*              | 1.00                     |             |       |  |
| (20) -0.07*   | -0.02                  | -0.08*                 | -0.04                 | 0.02           | 0.08*        | 0.02             | 0.02               | -0.01         | 0.02            | 0.09*            | 0.07*         | -0.15    | -0.07*                  | -0.08*                | -0.02            | 0.01               | -0.02                    | 1.00        |       |  |
| (21) -0.07*   | 0.06*                  | -0.05*                 | -0.03                 | -0.01          | -0.08*       | 0.01             | 0.10*              | -0.05*        | 0.04            | 0.14             | 0.05*         | 0.22     | -0.28*                  | -0.17*                | 0.07*            | 0.01               | 0.01                     | 0.08*       | 1.00  |  |

**Notes:** The table reports the correlation coefficients between the research variables. The exact definition of the variables is as presented in Tables II. \*, \*\*, \*\*\*, \*\*\*\*, \*\*\*\*\*Correlation coefficients that are significantly different from zero at the 10, 5 and 1 per cent level, respectively

We note that the correlation between country characteristics and debt financing decisions is a function of how we measure the latter. Firms in richer countries with more market-oriented financial systems and lower levels of perceived corruption tend to have higher total and long-term leverage ratios and long(er) debt maturities while such countries tend to have lower debt-to-equity and short-term leverage ratios. Finally, ownership concentration is likely to be negatively associated with higher levels of perceived corruption and higher levels of GDP growth while it is positively related with higher levels of GDP per capita and market-orientation in the financial systems. Finally, we note that correlation coefficients between perceived corruption, financial institutions, and size of the economy variables are very high. To keep the estimation problem tractable and avoid problems of multicollinearity when estimating models in the presence of high correlations, we develop slightly different specifications of the models by excluding highly correlated variables.

### 4.3 Regression results

*4.3.1 Corruption and debt-finance.* The theoretical literature suggested that the degree of corruption in a country will have a bearing on firm's debt financing and ownership structure decisions. In order to empirically verify the implications of the theoretical proposition, a set of models with multiple proxies for firm-level debt financing decisions, and ownership pattern as dependent variables were analysed. For the purpose of ensuring that the results are robust, the models were estimated using various estimation procedures including sys-GMM, GLS, and LOGIT estimation procedures. Table IV presents parameter estimates based on sys-GMM.

The literature typically considers various characteristics of a firm as proxies for tax advantage; agency, bankruptcy and transaction costs, and information asymmetry and analyses their role in the determination of firm's debt financing decisions. Although the focus of the present study is on the role of corruption on firm-finance, we control for firm-specific characteristics such as firm size, firm growth opportunities, firm profitability, earnings volatility, asset tangibility/maturity, and non-debt-related tax shield that are known to affect firm-level debt-financing decisions (see Harris and Raviv, 1991; Lemma, 2012, Lemma and Negash, 2011, 2012, 2013a, b, 2014; Rajan and Zingales, 1995, among others).

Our results in this regard (see Table IV) are broadly consistent with both the predictions of mainstream theories and the findings of other similar empirical studies. In line with prior empirical literature, we find that larger firms tend to have higher leverage and debt-to-equity ratios and also tend to use debts with long(er) maturity than is the case in smaller firms. On the contrary, firms with higher and more volatile earnings are likely to finance their investments using lesser debt than equity compared to those firms with lesser profit and earnings volatility. Expectedly, asset tangibility positively influences debt-to-equity ratio while it negatively influences short-term leverage. Likewise, the longer the maturity of assets of a firm, the more likely that the firm will have debts with longer maturity.

Also in tandem with the extant literature, we control for the financial system orientation, size of the overall economy and its growth rate. The results indicate that firms in countries with more market dominated financial sectors tend to have lesser short-term leverage and debt with long(er) maturity. Likewise, firms in richer countries are likely to have lesser short-term leverage, more long-term leverage, and more debts with long(er) maturity. Also, we note that higher economic growth leads to firms using more short-term leverage and more debt compared to equity.

**Table IV.**  
The effect of  
corruption on  
debt-financing  
decisions of a firm

| Variable               | Total leverage      | Debt to equity       | Short-term leverage | Long-term leverage | Debt maturity      | Total leverage      | Debt to equity     | Short-term leverage | Long-term leverage | Debt maturity      | Total leverage      | Debt to equity     | Short-term leverage  | Long-term leverage | Debt maturity       |
|------------------------|---------------------|----------------------|---------------------|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|----------------------|--------------------|---------------------|
| Firm size              | 0.014***<br>[-4.01] | 0.005<br>[-0.71]     | 0.007*<br>[-2.34]   | 0.008<br>[-0.86]   | 0.012*<br>[-2.42]  | 0.016***<br>[-3.81] | 0.007<br>[-0.75]   | 0.011**<br>[-3.12]  | 0.006<br>[-0.82]   | 0.006<br>[-0.47]   | 0.016***<br>[-3.57] | 0.017*<br>[-2.17]  | 0.011***<br>[-3.35]  | 0.007<br>[-0.43]   | 0.008<br>[-1.8]     |
| Growth opportunities   | 0.025<br>[-1.35]    | -0.010<br>[-0.44]    | 0.024<br>[-1.44]    | 0.004<br>[-0.02]   | 0.000<br>[0]       | 0.019<br>[-0.86]    | -0.001<br>[-0.01]  | 0.022<br>[-1.13]    | 0.004<br>[-0.02]   | 0.002<br>[-0.02]   | 0.022<br>[-0.99]    | -0.007<br>[-0.21]  | 0.023<br>[-1.25]     | 0.004<br>[-0.01]   | -0.001<br>[-0.01]   |
| Firm profitability     | -0.146<br>[-0.82]   | -0.459*<br>[-1.96]   | -0.018<br>[-0.15]   | -0.086<br>[-0.37]  | -0.212<br>[-0.76]  | -0.135<br>[-0.69]   | -0.413<br>[-1.12]  | -0.008<br>[-0.07]   | -0.098<br>[-0.25]  | -0.285<br>[-0.45]  | -0.163<br>[-0.87]   | -0.487*<br>[-2.55] | -0.076<br>[-0.74]    | -0.089<br>[-0.23]  | -0.231<br>[-0.97]   |
| Earnings Volatility    | -0.014<br>[-1.88]   | -0.028*<br>[-2.37]   | -0.004<br>[-0.48]   | -0.010<br>[-0.13]  | -0.006<br>[-0.41]  | -0.014*<br>[-1.96]  | -0.024<br>[-1.44]  | -0.007<br>[-0.63]   | -0.006<br>[-0.07]  | 0.002<br>[-0.03]   | -0.014<br>[-1.46]   | -0.025<br>[-1.49]  | -0.006<br>[-0.73]    | -0.004<br>[-0.04]  | 0.004<br>[-0.23]    |
| Asset tangibility      | 0.007<br>[-0.13]    | 0.157**<br>[-2.59]   | -0.097**<br>[-2.67] | 0.099<br>[-0.77]   | 0.001<br>[-0.02]   | 0.001<br>[-0.02]    | 0.172**<br>[-2.07] | -0.148*<br>[-2.06]  | 0.132<br>[-0.79]   | 0.005<br>[-0.11]   | -0.046<br>[-0.91]   | 0.098<br>[-1.2]    | -0.145***<br>[-3.29] | 0.106<br>[-1.09]   | 0.004<br>[-0.03]    |
| Tax shield             | -0.031<br>[-0.08]   | -0.947<br>[-1.66]    | 0.212<br>[-0.49]    | -0.173<br>[-0.07]  | 0.147<br>[-0.23]   | -0.081<br>[-0.23]   | -0.857<br>[-1.25]  | 0.198<br>[-0.28]    | -0.182<br>[-0.06]  | 0.305<br>[-0.1]    | -0.047<br>[-0.09]   | -0.380<br>[-0.36]  | 0.112<br>[-0.24]     | -0.048<br>[-0.03]  | 0.400<br>[-0.63]    |
| Asset maturity         |                     |                      |                     |                    | 0.010<br>[-2.81]   |                     |                    |                     |                    | 0.013**<br>[-2.88] |                     |                    |                      |                    | 0.010***<br>[-3.36] |
| Corruption             | 0.001<br>[-0.09]    | -0.094***<br>[-4.89] | 0.025*<br>[-2.22]   | -0.025*<br>[-2.00] | -0.050*<br>[-2.13] |                     |                    |                     |                    |                    |                     |                    |                      |                    |                     |
| Financial institutions |                     |                      |                     |                    |                    |                     |                    |                     |                    |                    |                     |                    |                      |                    |                     |
| Size of the economy    |                     |                      |                     |                    |                    |                     |                    |                     |                    |                    |                     |                    |                      |                    |                     |
| Economy growth         | 0.002<br>[-1.42]    | 0.003<br>[-1.3]      | 0.004**<br>[-2.78]  | 0.000<br>[-0.03]   | -0.003<br>[-0.72]  | 0.003<br>[-1.36]    | 0.006<br>[-1.59]   | 0.004**<br>[-2.84]  | 0.000<br>[-0.02]   | -0.003<br>[-0.42]  | -0.012<br>[-1.80]   | -0.004<br>[-0.22]  | -0.021***<br>[-3.68] | 0.008**<br>[-0.49] | 0.023**<br>[-2.82]  |
| Constant               | 0.049<br>[-0.95]    | 0.315<br>[-2.43]     | 0.026<br>[-0.46]    | 0.001<br>[-0.01]   | 0.085<br>[-1.15]   | 0.031<br>[-0.51]    | 0.009<br>[-0.05]   | 0.060<br>[-1.06]    | -0.038<br>[-0.22]  | 0.031<br>[-0.08]   | 0.132<br>[-1.62]    | -0.051<br>[-0.21]  | 0.237**<br>[-3.19]   | -0.118<br>[-0.49]  | -0.169<br>[-1.57]   |
| n                      | 2279                | 889                  | 2258                | 2036               | 2008               | 2230                | 869                | 2209                | 1996               | 1968               | 2276                | 888                | 2255                 | 2034               | 2006                |
| $\chi^2$               | 206.2***            | 584.2***             | 272.6***            | 276.0***           | 446.1***           | 231.3***            | 170.1***           | 280.8***            | 150.7***           | 323.8***           | 222.3***            | 300.6***           | 267.5***             | 267.5***           | 362.9***            |
| Sargan test            | 355.39              | 243.73               | 321.08              | 369.60             | 356.28             | 330.93              | 226.69             | 293.06              | 345.72             | 318.36             | 355.22              | 245.78             | 320.71               | 364.98             | 350.12              |
| $z^2$                  | -0.480              | -1.020               | 0.510               | -0.870             | -1.490             | -0.090              | -0.220             | -0.130              | -0.740             | -1.400             | -0.440              | -0.960             | 0.540                | -1.020             | -1.430              |

**Notes:** The table presents system-GMM regression results of Equation 1. Variations in sample size are due to data limitations. Robust standard errors are in brackets. The  $\chi^2$  test statistic refers to the null hypothesis that all coefficients on the determinants of target leverage ratio are jointly equal to zero. The test statistic  $Z^2$  tests the null hypothesis of no second order correlation in the residuals. The Sargan test statistic refers to the null hypothesis that the overidentifying restrictions are valid. All the variables are as defined in Table II. \*\*\*, \*\*, \* Coefficients significantly different from zero at 10, 5 and 1 per cent level, respectively

After controlling for key determinants of firm financing decisions, we find that the degree of perceived corruption has no significant influence on total leverage of firms in our sample. However, we observe that corruption has distinct and significant effects when more refined measures of debt-financing are considered. Particularly, our results indicate that firms in countries with higher levels of perceived corruption tend to use: first, lesser levels of debt compared to equity; second, higher levels of short-term liabilities; third, lesser levels of long-term liabilities; and fourth, debts with short-term maturities. The fact that we do not observe significant relationship between severity of corruption and total leverage is perhaps due to the fact that total leverage ratio is comprised of both short-term and long-term leverage ratios which themselves tend to have opposing relationships with the corruption variable.

The finding in first is in contrast to our expectation (*H1*). A possible explanation for this unexpected result is the manner in which the “debt-to-equity” ratio used in the model is computed. Even if the sample firms used considerable amount of liabilities as sources of finance, trade payables accounted for most of it. On the other hand, the “debt” in the “debt-to-equity” ratio includes only loans and long term debts and excludes trade payables. Thus, the dominance of loans (which tend to be of long-term nature) and long-term debt in the measurement of debt-to-equity ratio means that the relationship we observe between the two variables rather mirrors the one we would expect between corruption and long-term debt.

Our findings in second, third, and fourth above corroborate our expectation that companies in countries with higher levels of perceived corruption tend to use short-term debt than long-term debt (*H2*). These findings are also consistent with the notion that short-term debt are more common in more corrupt countries owing to the better protection they provide to lenders. Our evidence suggests that the potential “lender passivity” problem that firms in corrupt countries might exhibit was being addressed through the extensive use of short-term debt which, in such environments, provides incentives for lenders to enforce their claims and beneficial *ex ante* incentives to borrowers.

*4.3.2 Corruption and ownership patterns.* With a view to gain some more insights into how sample firms respond to failures in external corporate governance mechanisms, we investigated the nexus between the degree of corruption in a country and corporate ownership patterns at firm-level. We employed two groups of proxies to measure firm-level corporate ownership patterns. The first group of proxies focus on the degree of ownership concentration at firm-level measured by the percentage of shares owned by the top shareholders in a firm. The GLS estimates of alternative proxies are presented in Table V.

Pursuant to the rich literature on corporate ownership structure, we control for a number of firm-specific and country-level factors in our model specification. The firm-level control variables included firm’s total leverage, firm’s debt maturity structure, firm’s dividend payout policy, firm-level investment, the extent of institutional ownership in the firm, firm’s size, the number of years a firm is listed on a national stock exchange, firm’s growth opportunities, firm’s earnings volatility, and whether the firm is in a regulated industry or not. On the other hand, the country-level control variables included the relative importance of capital markets over banking sector in a country and the size of the overall economy and its growth rate. The overall results are consistent with those in prior research and broadly corroborate existing ownership structure theories. In contrast to the predictions of theory, we find that institutional

**Table V.**  
The effect of  
corruption on  
ownership  
concentration

|                         | CON_1               | CON_3               | CON_5               | CON_10              | CON_20              | CON_1                | CON_3                | CON_5                | CON_10               | CON_20               | CON_1               | CON_3               | CON_5               | CON_10              | CON_20              |
|-------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total leverage          | -0.012<br>[0.082]   | -0.660*<br>[0.313]  | -0.825**<br>[0.273] | -0.292<br>[0.231]   | -0.274<br>[0.232]   | -0.029<br>[0.191]    | -0.003<br>[0.022]    | -0.537*<br>[0.239]   | -0.247<br>[0.251]    | -0.195<br>[0.234]    | -0.050<br>[0.132]   | -0.145<br>[0.135]   | -0.800**<br>[0.274] | -0.222<br>[0.201]   | -0.131<br>[0.154]   |
| Debt maturity           | -0.013<br>[0.061]   | -0.120<br>[0.261]   | 0.046<br>[0.205]    | -0.099<br>[0.173]   | -0.099<br>[0.174]   | 0.057<br>[0.152]     | 0.001<br>[0.015]     | 0.104<br>[0.173]     | 0.036<br>[0.193]     | 0.031<br>[0.178]     | -0.025<br>[0.098]   | 0.021<br>[0.099]    | 0.078<br>[0.205]    | -0.078<br>[0.148]   | -0.044<br>[0.112]   |
| Dividend payout         | 0.013<br>[0.085]    | -0.213<br>[0.308]   | -0.044<br>[0.349]   | 0.100<br>[0.254]    | 0.097<br>[0.254]    | 0.042<br>[0.234]     | 0.001<br>[0.021]     | -0.008<br>[0.279]    | 0.054<br>[0.282]     | 0.050<br>[0.282]     | 0.048<br>[0.139]    | 0.050<br>[0.139]    | -0.051<br>[0.347]   | 0.027<br>[0.211]    | 0.054<br>[0.157]    |
| Firm level investment   | 0.003<br>[0.059]    | 0.264<br>[0.398]    | 0.144<br>[0.249]    | 0.011<br>[0.184]    | 0.012<br>[0.184]    | 0.014<br>[0.169]     | 0.000<br>[0.015]     | 0.065<br>[0.197]     | -0.009<br>[0.213]    | -0.008<br>[0.191]    | -0.002<br>[0.098]   | 0.005<br>[0.101]    | 0.154<br>[0.248]    | 0.004<br>[0.152]    | 0.002<br>[0.112]    |
| Institutional ownership | 0.229*<br>[0.112]   | 0.195<br>[0.121]    | 0.462***<br>[0.126] | -0.023<br>[0.157]   | -0.037<br>[0.161]   | 0.322**<br>[0.105]   | 0.222*<br>[0.113]    | 0.443***<br>[0.123]  | 0.120<br>[0.144]     | 0.105<br>[0.148]     | 0.227*<br>[0.112]   | 0.101<br>[0.122]    | 0.460***<br>[0.126] | -0.050<br>[0.157]   | -0.081<br>[0.161]   |
| Firm size               | 0.001<br>[0.011]    | -0.030<br>[0.031]   | 0.041<br>[0.029]    | -0.058*<br>[0.027]  | -0.062*<br>[0.027]  | 0.038<br>[0.022]     | 0.000<br>[0.003]     | 0.040<br>[0.025]     | -0.020<br>[0.029]    | -0.024<br>[0.028]    | 0.007<br>[0.016]    | -0.014<br>[0.017]   | 0.038<br>[0.029]    | -0.047<br>[0.025]   | -0.034<br>[0.02]    |
| Firm age                | 0.151<br>[0.078]    | 0.458***<br>[0.086] | 0.336***<br>[0.089] | 0.606***<br>[0.109] | 0.637***<br>[0.112] | 0.079<br>[0.075]     | 0.334***<br>[0.078]  | 0.322***<br>[0.086]  | 0.500***<br>[0.101]  | 0.530***<br>[0.103]  | 0.148<br>[0.078]    | 0.405***<br>[0.085] | 0.339***<br>[0.089] | 0.601***<br>[0.111] | 0.625***<br>[0.112] |
| Growth opportunities    | 0.000<br>[0.007]    | 0.035<br>[0.042]    | 0.000<br>[0.027]    | 0.017<br>[0.022]    | 0.018<br>[0.022]    | -0.008<br>[0.019]    | 0.000<br>[0.002]     | -0.003<br>[0.022]    | 0.008<br>[0.024]     | 0.008<br>[0.022]     | -0.002<br>[0.012]   | 0.005<br>[0.012]    | -0.002<br>[0.027]   | 0.011<br>[0.018]    | 0.008<br>[0.014]    |
| Earnings volatility     | 0.001<br>[0.006]    | 0.018<br>[0.04]     | 0.006<br>[0.024]    | -0.003<br>[0.018]   | -0.003<br>[0.018]   | 0.007<br>[0.016]     | 0.000<br>[0.001]     | 0.004<br>[0.019]     | -0.002<br>[0.02]     | -0.002<br>[0.018]    | 0.002<br>[0.009]    | -0.001<br>[0.009]   | 0.003<br>[0.023]    | -0.005<br>[0.014]   | -0.003<br>[0.011]   |
| Regulated industry      | 0.602***<br>[0.164] | 0.853***<br>[0.206] | 0.816***<br>[0.199] | 0.582*<br>[0.243]   | 0.638*<br>[0.248]   | 0.566***<br>[0.164]  | 0.718***<br>[0.162]  | 0.758***<br>[0.191]  | 0.534*<br>[0.227]    | 0.589*<br>[0.229]    | 0.596***<br>[0.168] | 0.712***<br>[0.184] | 0.826***<br>[0.201] | 0.539*<br>[0.240]   | 0.543*<br>[0.241]   |
| Corruption              | 0.021<br>[0.033]    | 0.453**<br>[0.138]  | 0.057<br>[0.114]    | 0.112<br>[0.096]    | 0.111<br>[0.097]    | -1.065***<br>[0.169] | -1.236***<br>[0.176] | -0.787***<br>[0.229] | -1.697***<br>[0.231] | -1.717***<br>[0.236] |                     |                     |                     |                     |                     |
| Financial institutions  |                     |                     |                     |                     |                     |                      |                      |                      |                      |                      |                     |                     |                     |                     |                     |
| Size of the economy     |                     |                     |                     |                     |                     |                      |                      |                      |                      |                      |                     |                     |                     |                     |                     |
| Constant                | -1.533<br>[0.242]   | -1.443<br>[0.537]   | -1.068<br>[0.478]   | -0.057<br>[0.486]   | -0.053<br>[0.492]   | -1.424***<br>[0.307] | -0.331<br>[0.204]    | -0.666<br>[0.369]    | 0.531<br>[0.417]     | 0.526<br>[0.411]     | -0.056<br>[0.053]   | -0.006<br>[0.054]   | 0.044<br>[0.084]    | 0.008<br>[0.078]    | 0.006<br>[0.064]    |
| n                       | 249                 | 233                 | 233                 | 253                 | 253                 | 249                  | 253                  | 233                  | 253                  | 253                  | 249                 | 253                 | 233                 | 253                 | 253                 |
| $\chi^2$                | 20.8***             | 64.5***             | 65.1***             | 40.9***             | 43.2***             | 65.3***              | 91.5***              | 76***                | 104***               | 105***               | 21.9**              | 38.5***             | 65***               | 37.6***             | 37.4***             |

**Notes:** The table presents GLS estimates of Equation 2. CON\_3 refers to the average percentage of direct shares owned by three largest shareholders of a firm. CON\_5 refers to the average percentage of direct shares owned by five largest shareholders of a firm. CON\_10 refers to the average percentage of direct shares owned by ten largest shareholders of a firm. CON\_20 refers to the average percentage of direct shares owned by 20 largest shareholders of a firm. All other variables are as defined in Table II. Variations in sample size are due to data limitations. Robust standard errors are in brackets. The  $\chi^2$  test statistic refers to the null hypothesis that all coefficients of the independent variables are jointly equal to zero. \*, \*\*, \*\*\* Coefficients significantly different from zero at 10, 5 and 1 per cent level, respectively



ownership and the number of years a firm is listed in a national stock exchange positively influence ownership concentration.

Consistent with our expectation (*H3*), the findings show that the level of perceived corruption in a country has an increasing effect on corporate ownership concentration when the latter is measured by the percentage of shares owned by the top 20 shareholders (CON\_20). This particular finding suggests that prospective minority shareholders in countries marred with corruption are disincentivised from allocating their financial resources in equity markets as contract enforcement and capital markets regulation in such countries is compromised. This lack of incentive to prospective minority shareholders led to the concentration of ownership in the hands of a few block shareholders.

Another measure of corporate ownership pattern that we used in this study was presence (or absence) of controlling shareholder. The results of logistic estimation procedure are presented in Table VI and the findings generally confirm results reported in Table V. In terms of the firm-level control variables, the odds that a firm in our sample would have a controlling shareholder is higher if: first, it has long(er) debt maturity; second, the largest shareholder is an institutional investor; and third, it is in a regulated industry. At country-level, we observe that the more the financial sector of a country is dominated by stock markets than banks, the less likely that a firm in such a country is likely to have a controlling block shareholder. In addition, our results indicate the likelihood that a firm in the sample would have a controlling shareholder increases if it is operating in a richer country.

Obviously, the main focus of the present study is on the impact of the degree of perceived corruption on corporate ownership pattern. We found a statistically significant relationship between the severity of perceived corruption and the presence of controlling shareholder. The sign of the estimated coefficient is consistent with our expectation that the more severe is perceived corruption in a country, the more likely that a firm in that country is to have a controlling block shareholder (*H4*). Our interpretation of this finding is that investors in our sample countries respond to weaknesses in the law enforcement institutions and the resulting uncertainty in business environment and aggravation to the agency problem by holding controlling block shares in the firms.

## 5. Conclusions

This paper sets out to determine the link between perceived corruption and corporate governance decisions of firms in the African continent. Particularly, it aims to examine the impact of perceived corruption on the debt-financing and corporate ownership structure decisions of firms in ten African countries. While firm-level data were drawn from the OSIRIS database maintained by Bureau D'IJK data, country-level variables were gathered from various web sites maintained by the WB. The data were examined using a range of estimation procedures.

We contended that corruption renders law enforcement institutions ineffective and hence distorts corporate governance. Further, we argued that firms in Africa respond to severity of perceived corruption through debt-financing and corporate ownership structure decisions. One of the evidences that the present study documents is that perceived corruption is, indeed, important in shaping debt financing and ownership structure decisions of firms in Africa. It suggests that companies in countries with higher levels of corruption tend to use short-term debt than long-term debt. This, in

**Table VI.**  
The effect of  
corruption and block  
shareholding

|                         | Block_5           | Block_20           | Block_25           | Block_5           | Block_20            | Block_25           | Block_5           | Block_20          | Block_25            |
|-------------------------|-------------------|--------------------|--------------------|-------------------|---------------------|--------------------|-------------------|-------------------|---------------------|
| Total leverage          | -1.277<br>[2.117] | -0.614<br>[0.86]   | -0.892<br>[0.836]  | -0.59<br>[1.964]  | -0.373<br>[0.847]   | -0.66<br>[0.826]   | -0.319<br>[2.197] | -0.486<br>[0.852] | -0.874<br>[0.833]   |
| Debt maturity           | -1.423<br>[1.381] | 1.942*<br>[0.766]  | 0.891<br>[0.74]    | -0.109<br>[1.253] | 2.715***<br>[0.786] | 1.726*<br>[0.772]  | -1.23<br>[1.599]  | 1.65*<br>[0.732]  | 0.661<br>[0.705]    |
| Dividend payout         | 0.581<br>[3.014]  | -1.4<br>[1.949]    | 0.782<br>[1.92]    | 0.076<br>[3.112]  | -0.969<br>[1.946]   | 1.533<br>[1.988]   | 0.711<br>[2.777]  | -1.588<br>[1.979] | 0.664<br>[1.928]    |
| Firm level investment   | 0.849<br>[2.654]  | 0.132<br>[1.467]   | 0.988<br>[1.455]   | 0.659<br>[2.803]  | -0.256<br>[1.473]   | 0.606<br>[1.499]   | 2.59<br>[2.89]    | 0.409<br>[1.477]  | 1.15<br>[1.464]     |
| Institutional ownership | -                 | 0.699*<br>[0.29]   | 0.738**<br>[0.272] | -                 | 0.812***<br>[0.289] | 0.898**<br>[0.274] | -                 | 0.705*<br>[0.29]  | 0.724***<br>[0.272] |
| Firm size               | 0.202<br>[0.149]  | -0.089<br>[0.081]  | -0.078<br>[0.081]  | 0.075<br>[0.179]  | -0.038<br>[0.084]   | -0.002<br>[0.085]  | 0.104<br>[0.168]  | -0.114<br>[0.08]  | -0.081<br>[0.081]   |
| Firm age                | -0.883<br>[0.727] | 0.312<br>[0.197]   | 0.281<br>[0.191]   | -0.648<br>[0.781] | 0.187<br>[0.209]    | 0.128<br>[0.207]   | -0.36<br>[0.684]  | 0.365<br>[0.2]    | 0.297<br>[0.194]    |
| Growth opportunities    | -0.057<br>[0.205] | 0.086<br>[0.124]   | -0.055<br>[0.197]  | 0.142<br>[0.221]  | 0.113<br>[0.127]    | -0.03<br>[0.158]   | 0.083<br>[0.214]  | 0.075<br>[0.122]  | -0.07<br>[0.2]      |
| Earnings volatility     | 0.369<br>[0.267]  | 0.249<br>[0.183]   | 0.033<br>[0.183]   | 0.347<br>[0.252]  | 0.327<br>[0.19]     | 0.102<br>[0.181]   | 0.326<br>[0.261]  | 0.23<br>[0.181]   | 0.013<br>[0.181]    |
| Regulated industry      | -0.246<br>[1.241] | 1.219*<br>[0.587]  | 1.661**<br>[0.572] | -0.073<br>[1.324] | 1.185<br>[0.606]    | 1.617**<br>[0.584] | 0.211<br>[1.514]  | 1.305*<br>[0.61]  | 1.683**<br>[0.589]  |
| Corruption              | -2.114<br>[0.456] | 0.054**<br>[0.336] | 0.223*<br>[0.329]  | -                 | -                   | -                  | -                 | -                 | -                   |

(continued)

|                        | Block_5            | Block_20         | Block_25          | Block_5          | Block_20             | Block_25             | Block_5             | Block_20          | Block_25          |
|------------------------|--------------------|------------------|-------------------|------------------|----------------------|----------------------|---------------------|-------------------|-------------------|
| Financial institutions |                    |                  |                   | 1.399<br>[0.837] | -1.783***<br>[0.479] | -2.283***<br>[0.482] | 1.198***<br>[0.354] | 0.265<br>[0.206]  | 0.077<br>[0.197]  |
| Size of the economy    |                    |                  |                   | 2.587<br>[1.785] | 0.344<br>[0.977]     | 0.127<br>[0.97]      | -7.638<br>[3.907]   | -1.532<br>[1.817] | -0.216<br>[1.727] |
| Constant               | 7.994**<br>[2.563] | 0.312<br>[1.237] | -0.181<br>[1.225] | 2.587<br>[1.785] | 0.344<br>[0.977]     | 0.127<br>[0.97]      | 1.198***<br>[0.354] | 0.265<br>[0.206]  | 0.077<br>[0.197]  |
| $n$                    | 180                | 292              | 292               | 180              | 292                  | 292                  | 180                 | 292               | 292               |
| $\chi^2$               | 32.18***           | 22.52**          | 20.75**           | 18.52**          | 32.6***              | 40.88***             | 26.46***            | 24.23**           | 20.55**           |

**Notes:** The Table presents estimation results of Equation 3. Presented in first rows are the natural logarithms of odds ratio  $[L = \ln(P_i/1 - P_i)]$ , robust standard errors are in parenthesis. Block\_5 refers to a dummy variable with a value of 1 if the percentage of shares owned by the largest shareholder is greater than five per cent of the total shares outstanding; otherwise 0. Block\_20 refers to a dummy variable with a value of 1 if the percentage of shares owned by the largest shareholder is greater than twenty per cent of the total shares outstanding; otherwise 0. Block\_25 refers to a dummy variable with a value of 1 if the percentage of shares owned by the largest shareholder is greater than twenty-five per cent of the total shares outstanding; otherwise 0

Table VI.

turn, indicates that the potential “lender passivity” problem that sample firms in corrupt countries might exhibit was being addressed through the extensive use of short-term debt which, in such environments, provides incentives for lenders to enforce their claims and beneficial *ex ante* incentives to borrowers. Our evidence also shows that companies in countries with higher levels of perceived corruption tend to make up for inefficiencies in contract enforcement, compromises in capital market regulation, and uncertainties in business environment through increased ownership concentration and block shareholding.

We draw three important implications from this finding. First, corruption could lead to a situation where much of the debt-financing is overly skewed to short-term debt which will further increase the probability of default as short-term debts create liquidity pressure on firms (Diamond, 1991). And, the fact that companies in corrupt countries would make lesser use of long-term financing implies that such companies would have difficulty in financing long-term investments. Second, the higher corporate ownership concentration and the higher propensity to have a controlling block shareholders by firms in countries with higher degrees of perceived corruption means that investment portfolio of owners of such firm is less diversified. In other words, investors in the African continent are attaining better corporate governance only by settling for not so well diversified investment portfolios. Thus, higher corruption in Africa could trigger the occurrence of rather frequent bankruptcies and business failures. Third, poor institutional protection of minority shareholders and the prevalence of controlling block shareholders in more corrupt countries could lead to expropriation of minority shareholders.

#### Notes

1. Whereas state capture is directed at influencing the content of laws and rules, administrative corruption is directed to influence the implementation of existing laws and rules (World Bank, 2000).
2. A firm, within the context of this study, is said to have a controlling shareholding if a shareholder’s direct voting rights exceed 20 per cent. Widely held companies are those without controlling shareholder.

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