Corruption, Independent Audit, and Equity Value*

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Abstract: We examine the effects of government corruption and independent audit on shareholders' wealth across countries. We present a simple model where insiders have the power to divert the firm's resources for personal use, government officials expropriate the proceeds from investment with positive probability, and an independent auditor can detect the diversion by the insiders. Our model predicts that (1) corruption has a negative effect on equity value because insiders' incentives to divert resources increase with the level of corruption; (2) independent audit has a positive effect on equity value by deterring insiders' diversion; and (3) the positive effect of independent audit on equity value is stronger in countries that are more corrupt. With a comprehensive data on audit fees from 30 countries for the period 1995–2012, we report empirical results that are consistent with the theoretical predictions. Overall, our findings suggest that government corruption and independent audit have opposite effects on equity value and that auditing plays a more important disciplining role in countries with higher levels of corruption.

Keywords: Audit fees; agency costs; equity value; corruption, monitoring

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I. Introduction

Independent audit limits the diversion of resources from minority shareholders by corporate insiders (controlling owners and managers) and thereby facilitates firms' access to capital markets and enhances shareholders' wealth, especially in countries with weak investor protection (e.g., Choi and Wong 2007; Fan and Wong 2005; Francis et al. 2011; Newman, Patterson, and Smith 2005). Recent research documents that corruption depresses economic growth and investment and is detrimental to capital markets development (e.g., Chinn and Ito 2006; Johnson et al. 2000a; Lee and Ng 2009; Mauro 1995; Wei 2000). In this paper, we examine the joint effect of corruption and independent audit on equity value across countries.

We present a simple model showing that auditing mitigates the detrimental consequences of corruption even if auditors cannot deter government officials from engaging corrupt activities and thus have no direct effect on corruption. Our model shows that the insiders' divert more corporate resources, and equity values accordingly are lower, in corrupt countries. Auditing, however, deters the insiders from diverting corporate resources and thereby increases equity values. Further, the disciplining role of independent audit—and thus its positive effect on equity values—is greater in countries with high levels of corruption. We then test the model's predictions using a sample of publicly traded companies from thirty countries over the period from 1995 to 2012 period and report empirical results that support our theoretical predictions.

Corruption, defined as "abuse of entrusted power for private gain" by government officials, has been a pervasive phenomenon throughout the human history and is known to be an obstacle to economic growth, especially in developing economies.[1] The involvement of the government, which distinguishes corruption from other types of crime such as burglary and theft (Lederman,

[1] This definition of corruption is adopted by Transparency International, the leading anti-corruption agency in the world: see http://www.transparency.org/whoweare/organisation/faqs_on_corruption.

Loayza, and Soares 2005), makes combating it an extremely difficult task. To date, the sizeable literature on combating corruption has investigated the effect of law enforcement (e.g., Kugler, Verdier, and Zenou 2005), transparency (e.g., Costa 2013), and incentives for government officials (e.g., Niehaus and Sukhtankar 2013), but has largely overlooked the role of accounting and auditing. We argue that the role of independent audit in holding corporate insiders accountable for their actions is greater in countries characterized by high levels of corruption. Our study thus contributes to the literature on corporate governance by documenting the value added by auditing as a function of the institutional environment.

Following Ball, Jayaraman, and Shivakumar (2012), we use audit fees (scaled by the book value of equity) as our empirical measure of the level of independent audit per unit of capital acquired by the client.[2] In doing so, we build upon the studies documenting that audit fees are positively related with (*i*) auditor effort, complexity, and expertise (e.g., Bedard and Johnstone 2004; Bell, Doogar, and Solomon 2008; Hogan and Wilkins 2008; Low 2004) and (*ii*) audit quality (e.g., Blokdijk et al. 2006; Craswell, Francis, and Taylor 1995; Ferguson, Franics, and Stokes 2003; Francis and Yu 2009). These results are also consistent with theoretical predictions (e.g., Hillegeist 1999; Melumad and Thoman 1990; Newman and Noel 1989; Newman et al. 2005; Schwartz 1997) that in a competitive market audit fees are increasing in the level of audit. Our approach contributes to the literature that uses the indicator variable to identify Big Four audit firms as a proxy for audit quality (e.g., Choi and Wong 2007; Teoh and Wong 1993) by using audit fees, which provide a finer measure of the level of audit (Ball et al. 2012). We also include the Big Four indicator to capture the incremental effect of auditor reputation on equity value beyond the audit fees.

[2] We performed our empirical tests using three different measures of capital: book value of equity, book value of total assets, and market value of equity. The results are qualitatively the same; they are available upon request.

Before we present the formal tests on the predictions of the model using the firm level data, we perform empirical analysis of the relations between corruption and auditing with financial development at the country level. Our model predicts that corruption and independent audit have opposite effects on shareholders' wealth and therefore suggests that corruption should have a negative effect on financial development at the country level. We use the market-capitalization-to-GDP ratio and the number-of-listed-firms-to-population ratio as two measures of financial development and document that corruption has a negative, and audit fees have a positive, effect on both measures of financial development.

In our empirical tests on the theoretical predictions, we first document that corruption has a negative and significant effect on equity values. Further, we report that audit fees have a significant positive effect on equity values. Using a two-stage approach, we first obtain the coefficient of audit fees in the regression of equity values on audit fees (controlling for growth and profitability) for each country-year; and in the second stage, we regress the coefficient of audit fees obtained in the first stage on corruption index. We find that corruption index has a significant and positive coefficient, consistent with the prediction that the value of auditing is higher in countries with higher level of corruption. Overall, the empirical results support the theoretical predictions.

This study makes the following contributions. First, it contributes to the literature on auditing as an instrument of corporate governance around the world (Choi and Wong 2007; Choi et al. 2008; Fan and Wong 2005; Francis and Wang 2008; Newman et al. 2005) by documenting its role in mitigating the detrimental effects of corruption. To date, the studies on the determinants of audit quality (see DeFond 2013 and Knechel et al. 2013 for recent reviews) have primarily focused on firm-level characteristics, such as the severity of agency problems.

Investigating corruption, which characterizes a broader institutional environment, points out the disciplining role that auditing plays in deterring the insiders from diverting corporate resources. This role serves as one of the factors determining the demand for high-quality audit services. Our study also contributes to a broader literature on corporate governance and investor protection (e.g., Kofman and Lawarrée 1993; La Porta et al. 1998; Laffont 2001; Tirole 2006), which identifies independent audit as an integral part of the system of checks and balances. In this study, we treat the amount of audit services acquired by the client firm as exogenous and leave building a model where the demand for audit service is determined endogenously by the characteristics of the client firm and its operating environment for future research.

Second, our study contributes to the literature studying the effect of the power of government and government intervention on the provision of audit services. Empirical evidence suggests that government intervention, which can range from undue meddling to outright corruption, often has a detrimental effect on audit quality and independence (e.g., Chan, Lin, and Mo 2006; DeFond, Wong, and Li 2000; Wang, Wong, and Xia 2008; Yang 2013). Our results documenting that the value of independent audit is higher in corrupt environments are consistent with the marginal benefit of auditing in countries with higher levels of corruption offsetting the marginal loss in audit quality from government intervention. One implication of our study is that the checks and balances on the government sector through separation of powers or even by public auditing in a country is an important pre-condition for improving corporate governance. Investigating the joint effects of the two countervailing forces charts a promising direction for future research.

Finally, our study contributes to the growing literature on the detrimental effects of corruption on economic development and stock market participation and the means of combating

corruption (e.g., Blackburn and Forgues-Puccio 2009; Hoff and Stiglitz 2004; Niehaus and Sukhtankar 2013). The literature has long pointed out that the level of corruption is to a large extent determined by the perception of economic agents that are perceived as engaged in it (Andvig and Moene 1990; Blackburn, Bose, and Haque 2006; Cadot 1987). One implication is that, when economic agents—such as managers and controlling shareholders—believe that corruption is widespread, they are more likely to divert resources for private use, but will refrain from doing so if the prevailing public sentiment disapproves of corruption. Our results suggest that auditing improves equity values, especially in corrupt environments. The literature just mentioned then suggests that this positive effect on investors' expectations can help reduce the level of corruption by helping economic agents to coordinate on a Pareto-dominant equilibrium with low levels of corruption. Since the environment for corruption is secrecy and opaqueness, we believe that the role of auditing in combating corruption merits our efforts in future investigation (Shleifer and Vishny 1993).

The rest of the paper is organized as follows. Section II discusses related literature and develops research hypotheses. Section III lays out the research design and describes the sample. Section IV presents the empirical results and robustness checks. Section V concludes the paper.

II. A Simple Model and Empirical Predictions

In this section we present a simple model that serves to illustrate the effect of an independent audit on equity value in environments characterized by high levels of corruption, where auditors cannot mitigate the detrimental effects of corruption directly but can influence the behavior of corporate insiders. We consider a setting similar to the one studied in Desai, Dyck, and Zingales (2007), Durnev and Kim (2005), Johnson et al. (2000a), La Porta et al. (2002), and Shleifer and Wolfenzon (2002). As in these studies, the conflict of interest is between insiders (managers or

controlling shareholders) who have equity ownership $\lambda \in (0, 1)$ of the firm and outside shareholders, who own the remaining $1 - \lambda$. We do not consider the sale of new equity and assume that λ is given exogenously. The firm has $I \geq 0$ in cash, which it can invest in a project with the rate of return $R \geq 1$. We normalize the firm's costs to zero; thus the firm that invests I at the beginning of the accounting period has the value of RI at the end of the period.

Although corruption manifests itself in wide variety of practices (e.g., Bardhan 1997; Rose-Ackerman 1999), it most often involves extortion by politicians and bureaucrats that ranges from petty harassment to outright expropriation of the firm's assets. Liquid assets such as cash are particular susceptible to expropriation (Caprio, Faccio, and McConnell 2013; Myers and Rajan 1998). Accordingly, we model corruption as the use of the coercive power of the state by government officials to extort corporate profits, demanding bribes and special payments. For concreteness, we assume that, with probability $\beta \in (0, 1)$ corrupt officials expropriate the firm's profit after the investment project has been implemented. Parameter β thus represents expected deadweight loss owing to corruption caused, e.g., by unwarranted regulation ("red tape"), arbitrary application of the law, or lack of trust on the part of consumers and business partners.

The insiders can divert $d \geq 0$ of cash for personal use before they invest the remainder in the project. In real life, such diversion, or "tunneling," takes a variety of forms, including transactions with related parties, excessive salaries and bonuses, executive perquisites, and in some cases outright fraud (e.g., Johnson et al. 2000b; Bertrand, Mehta, and Mullainathan 2002). Even when such practices are not technically illegal, they are generally viewed as improper; therefore, the insiders exposed as engaging in them at the very least suffer a substantial loss of reputation (e.g., Dyck, Volchkova, and Zingales 2008). Auditors discover and bring to light the instances of diversion, especially in settings with poor corporate governance (e.g., Dyck, Morse,

and Zingales 2010; Fan and Wong 2005) and, by doing so, deter the insiders from engaging in such practices. But deterring government officials from engaging in expropriation is outside auditors' purview. Because we focus on the statutory role of auditing in monitoring corporate insiders, in our model auditors have no direct effect on corruption. We also assume that, because expropriation by government officials usually does not leave a reliable paper trail, auditors cannot distinguish it from diversion by corporate insiders.

We model insiders' expected personal cost of diversion (in utility terms) is an increasing and convex function of the amount diverted. That is, the expected cost of diverting the first dollar is essentially zero but it increases at an increasing rate because egregious cases of diversion are more likely to come to light and attract adverse publicity and prosecution. We follow earlier studies (e.g., Johnson et al. 2000a; Desai, Dyck, and Zingales 2007) and model the cost of diversion as a quadratic function $c(d) = d^2k/2$, where $k \geq 0$. The cost $c(d)$ is determined by costly transactions required to divert the resources (e.g., Burkart, Gromb, and Panunzi 1998; Johnson et al. 2000b), the institutional environment (such as strictness of law enforcement and freedom of the press), and audit effectiveness. Taking transaction costs and institutional characteristics as given, we interpret k as a parameter that measures the amount of resources (quantity and quality) expended by the auditor and reflected in audit fees.

In practice, the effectiveness of an audit is determined by the characteristics of the firm (such as corporate governance, agency problems, and organizational structure), the auditor (such as the strength of the litigation and reputation incentives, the assessment of the client's risk, and the audit technology), and the institutional environment. A model with endogenous audit quality would thus require a detailed specification of the above characteristics, the actions available to the players, and the information structure; we leave building such a model for future research.

The insiders solve the following program:

$$\max_d \left[(1-\beta)\lambda R\left(I-d\right) + d - (1-\beta)\frac{k}{2}d^2 \right]. \tag{1}$$

The first expression in (1) is the expected dividend, the second one is the value of diverted resources, and the third one is the expected cost of diversion. The latter term acknowledges that, when government officials expropriate firm's profits (with probability $1-\beta$), the auditor cannot ascertain the exact amount expropriated and thus cannot detect diversion by the insiders.

The first-order condition for (1) is $1-(1-\beta)(dk-\lambda R)=0$; therefore, the optimal amount of diversion, d^*, is given by

$$d^* = \frac{1}{k}\left(\frac{1}{1-\beta} - \lambda R\right). \tag{2}$$

Following Johnson et al. (2000a), we assume that the insiders never find it optimal to divert more than I and never divert a negative amount. Formally, we make the following assumptions:

Assumption 1: $1 \le (Ik + \lambda R)(1-\beta)$.

Assumption 2: $\lambda R(1-\beta) \le 1$.

The above assumptions guarantee an interior solution. Differentiating (2) with respect to the level of corruption, β, we obtain

$$\frac{\partial d^*}{\partial \beta} = \frac{1}{k\left(1-\beta\right)^2} > 0.$$

That is, there is more diversion in countries with higher levels of corruption. At the optimum, the insiders balance the marginal cost against the marginal benefit of diversion. An increase in the probability of expropriation by government officials increases the marginal benefit of diversion, making it more attractive because the marginal cost does not change. Intuitively, the insiders follow the proverbial rule that a bird in the hand is worth two in the bush: although investing

cash in the firm results in a positive return with probability $1-\beta$, the proceeds from investment are expropriated with probability β. A higher level of diversion decreases the amount invested; this result is consistent with the empirical studies (e.g., Aidt 2009; Mauro 1995; Mo 2001; Wei 2000) documenting a negative relation between corruption and corporate investment.

The expected value of the total equity in the firm is given by $V=(1-\beta)(I-d^*)R$. Differentiating with respect to β, we obtain

$$\frac{\partial V}{\partial \beta}=-\frac{R}{k}\left(k+\lambda R\right)<0.$$

Observation 1: *Countries with higher levels of corruption are characterized by lower equity valuations.*

As shown above, corruption affects valuation via two channels: it increases the expected loss from expropriation and also encourages the insiders to divert more. Empirical results consistent with the above prediction are reported in Lee and Ng (2009), which documents a negative association between corruption and equity values in a cross-country setting.

Differentiating equity value with respect to k yields

$$\frac{\partial V}{\partial k}=\frac{R}{k^2}\left(1-\lambda R\left(1-\beta\right)\right)\geq 0,$$

where the inequality follows by Assumption 2.

Observation 2: Independent audit increases equity values.

A similar result is derived Newman et al. (2005) in a model without corruption.

Next, taking a cross-partial derivative of the equilibrium amount of diversion with respect to β and k, we obtain

$$\frac{\partial^2 d^*}{\partial\beta\partial k} = -\frac{1}{k^2(1-\beta)^2} < 0.$$

Because the insiders have incentives to divert more in corrupt countries, the same amount of audit resources turns out to be more effective in deterring diversion. In other words, auditing plays a more important disciplining role in corrupt countries even though it has no *direct* effect on the actions of corrupt officials. The above prediction is consistent with the empirical evidence on auditor's corporate governance role in East Asian countries reported in Fan and Wong (2005).

Taking a cross-partial derivative of firm value with respect to β and k, we obtain:

$$\frac{\partial^2 V}{\partial\beta\partial k} = \frac{\lambda R^2}{k^2} > 0.$$

Observation 3: The positive effect of independent audit on equity valuation is stronger in countries with higher levels of corruption.

A robust finding in the auditing literature reviewed in the Introduction is that, when the market for audit services is competitive, audit fees are increasing in the amount of audit resources (both quantity and quality). Accordingly, we formulate our empirical predictions derived from the above analytical results as follows:

H1: There is a negative relation between a country's level of corruption and equity value.

H2: There is a positive relation between audit fees and equity value.

H3: The positive effect of audit fees on equity value is stronger in countries with higher levels of corruption.

III. Research Design

The effect of government corruption on equity value

Our hypothesis H1 posits that there is negative relation between equity value and corruption. To test this hypothesis, we estimate the following regression model:

$$V_t/B_{t-1} = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 X_t/B_{t-1} + \alpha_3 G_t + \varepsilon_t, \quad (1)$$

where V_t/B_{t-1} is market equity of year t divided by beginning-of-period book equity; $CORRUPT_t$ is a country's corruption index in year t, where the index ranges from 0 (low corruption) to 1 (high corruption); X_t/B_{t-1} is year-t earning divided by beginning-of-period book equity; and G_t is year-t sales minus beginning-of-period sales divided by beginning-of-period sales. The valuation model follows the valuation theory and prior studies to control for the profitability and the expected growth rate of earnings (Ohlson 1995; La Porta et al. 2002).

Our index of government corruption comes from Heritage Foundation's Corruption Index. The index is compiled based on surveys of entrepreneur's perception of the level of corruption in the business environment, including levels of governmental, legal, judicial and administrative corruption. We expect α_1 to be a negative coefficient.

We re-estimate the above model at the country level:

$$Mean(V_t/B_{t-1}) = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 Mean(X_t/B_{t-1}) + \alpha_3 Mean(G_t) + \varepsilon_t, \quad (2)$$

where $Mean(V_t/B_{t-1})$ is year-t mean value of the ratio of market equity to beginning-of-period book equity in a given country; $Mean(X_t/B_{t-1})$ is year-t mean value of the ratio of earnings to beginning-of-period book equity in a given country; $Mean(G_t)$ is year-t mean value of sales growth in a given country; and other variables are defined before. We expect α_1 to be a negative coefficient.

The effect of independent audit on equity value

Our hypothesis H2 posits that there is a positive relation between audit fees and equity value. To test H2, we estimated the following regression model:

$$V_t/B_{t-1} = \alpha_0 + \alpha_1 F_t/B_{t-1} + \alpha_2 BIG_t + \alpha_3 X_t/B_{t-1} + \alpha_4 G_t + \varepsilon_t, \quad (3)$$

where F_t/B_{t-1} is year-t audit fees divided by beginning-of-period book equity, *BIG* is an indicator variable that is coded as 1 if the auditor is one of the Big Four audit firms, and other variables are as defined before. To examine whether the reputations of the Big Four firms have an incremental effect in explaining equity values beyond audit fees, we add the indicator variable, *BIG*. We predict the coefficients α_1 and α_2 both to have positive signs.

The relation of corruption and the disciplining role of independent audit

Our hypothesis H3 posits that the positive effect of audit fees on equity value increases with the level of corruption. We perform empirical analysis using a two-stage approach. In the first stage, we estimate the relation of equity value and audit fees per equation (3) to obtain the coefficient (α_1) of F_t/B_{t-1} for each country-year. In a second-stage regression, we regress the estimate of α_1 obtained in the first stage on the level of corruption (*CORRUPT*) of the corresponding country-year. In order to show that the effect of corruption is distinct from those of other legal and governance variables, we include in the model a set of control variables including the legal origin, the effectiveness of securities law enforcement, shareholder rights, creditor rights, efficiency of the judiciary, the quality of accounting standards, and state-owned enterprises index. Specifically, we estimate the following regression models in the second stage:

$$\begin{aligned}\alpha_1 &= \lambda_0 + \lambda_1 CORRUPT_t + \lambda_2 COMMON + \lambda_3 SECLAW + \lambda_4 ANTDIR \\ &+ \lambda_5 CREDIT + \lambda_6 EFFJUD + \lambda_7 ACC + \lambda_8 SOE + \lambda_9 GDP_t + \varepsilon_t, \quad (4)\end{aligned}$$

where α_1 is the coefficients of F_t/B_{t-1} from the first-stage regression model (3) and $CORRUPT_t$ is the year-t corruption index as defined before.

The control variables in the model (4) are defined as follows: *COMMON* is an indicator variable coded as one if the legal origin of the company law or commercial code of the country is English common law and zero otherwise. *SECLAW* is the index of security law enforcement in La Porta et al. (2006), defined as the arithmetic mean of: (1) disclosure Index, (2) burden of proof index, and (3) public enforcement index; the index ranges from 0 (weak security law enforcement) to 1 (strong security law enforcement). *ANTDIR* is an index measuring the anti-director rights of shareholders in the country, as reported in La Porta et al. (1998); the index is formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minority shareholders mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to ten percent (the sample median); or (6) when shareholders have preemptive rights that can only be waived by a shareholders meeting; the index ranges from 0 (weak anti-director rights) to 5 (strong anti-director rights). *CREDIT* is an index measuring creditors' rights reported in La Porta et al. (1998), formed by adding one when: (1) the country imposes restrictions, such as creditors' consent or minimum dividends, to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization.

The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights). *EFFJUD* is an index measuring efficiency of the judiciary reported in La Porta et al. (1998), formed by the assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms. It may be taken to represent investors' assessment of conditions in the country in question. The index is averaged between 1980 and 1983 and ranges from 0 (low efficiency) to 10 (high efficiency). *ACC* is an index measuring the quality of a country's accounting standards reported in La Porta et al. (1998), created by examining and rating companies' annual reports on their inclusion or omission of 90 items. These items fall into seven categories, including general information, income statements, balance sheets, funds flow statements, accounting standards, stock data, and special items. A higher index indicates higher quality of accounting standards. *SOE* is an index of state-owned enterprises as a share of the economy reported in La Porta et al. (2002); the index ranges from 0 (less government-owned enterprises) to 10 (more government-owned enterprises). GDP_t is year-t logarithm of per-capita Gross Domestic Product in a given country. See Appendix for detailed variable definitions.

In estimating the regression model (4), we expect λ_1 to be a positive coefficient.

Data sources and the Sample

We collect data on firms' auditors and audit fees and other financial information from the Worldscope Thomson One Banker. We increase our US sample by using audit data from Audit Analytics. We collect the corruption index for each country-year from the Heritage Foundation.[3] Macro-variables measuring the economy's level of development (per-capita Gross Domestic Product and per-capita Gross National Income) and macro-variables measuring the level of stock market development (the ratio of stock market capitalization to Gross Domestic Product and

[3] See www.heritage.org/index/freedom-from-corruption.

ratio of number of listed domestic firms to population) are from the World Development Indicators reported by the World Bank.[4] The data on the institutional factors (legal origin, efficiency of security law enforcement, rights of shareholders and creditors, efficiency of judiciary, quality of accounting standards, and state-owned enterprises index) for each country are from La Porta et al. (1998; 2002; 2006).

We remove firms in the financial sector (SIC codes 6000–6999). We also exclude small firms (i.e., the ones where either the book value or market value of equity is less than one million U.S. dollars or equivalent at the fiscal year end). We trim 1% of the extreme observations at the top and bottom ends of the distribution for each continuous financial variable. We exclude small country-years (i.e., the ones with less than 20 firms). Our final sample consists of 87,263 firm-year observations from 30 countries for the period from 1995 to 2012.

Panel A of Table 1 presents the descriptive statistics of the pooled sample. The mean (median) market-to-book ratio is 2.35 (1.61); audit fees (scaled by book equity) is 0.37% (0.22%); earnings-to-book ratio is 0.10 (0.10); annual sales growth rate is 0.14 (0.09); corruption index is 0.30 (0.25). The mean percentage of BIG auditors is 72%.

Panel B of Table 1 reports the annual statistics of audit fees-related variables over the 1995–2012 period. The table shows the annual means of audit fees and audit fees-to-book ratios for the annual sample, the NON-BIG auditors, and the BIG auditors. In general, there is an increase in the audit fees and audit fees-to-book ratio in post-SOX period (2002–2012) compared with the pre-SOX period (1995–2001). The trend of increase is especially strong in NON-BIG auditors than for the BIG auditors. This is consistent with prior finding in the United States that small and low-quality auditors have dropped out of the market after the increased cost of regulatory compliance after SOX (DeFond and Lennox 2011). As shown in the table, the number

[4] See http://data.worldbank.org/data-catalog/world-development-indicators.

of observations also increases over time. In year 2000, the initiation of mandated disclosure of audit fees in the U.S. caused a jump in the observations in subsequent years. While audit fees for firms with NON-BIG auditors are smaller than that for firms with BIG auditors, the audit-fees-to-book ratio for firms with NON-BIG auditors are slightly larger than those for firms with BIG auditors. This evidence is consistent with economies of scale in auditing.

Panel C of Table 1 reports mean values of selected variables and the numbers of observations in each country for the 30 countries in our sample. The mean of the market-to-book ratio (V_t/B_{t-1}) varies from 1.20 (Japan) to 2.94 (Sweden). The mean of the audit-fees-to-book-equity ratio (F_t/B_{t-1}) varies from 0.06% (Pakistan) to 0.65% (United Kingdom). The percentage of firms with BIG auditors ranges from 16% (India) to 99% (Finland). The mean of the earnings-to-book ratio (X_t/B_{t-1}) ranges from 0.06 (Italy and Japan) to 0.23 (South Africa). The mean of the sales growth rate (G_t) varies from –0.03(Portugal) to 0.24 (China). The corruption index ($CORRUPT_t$) ranges from 0.05 (Denmark) to 0.77(Pakistan). The mean of audit fees amount denominated in U.S. dollars (F_t) varies from 0.04 million (Pakistan) to 3.12 million (Netherlands). Overall, our international sample shows a substantial variation across countries in market-book ratios, audit fees, market share of BIG auditors, profitability, growth opportunities, and the level of corruption.

Panel D of Table 1 reports the pair-wise correlation coefficients of the variables in our empirical tests. As shown in the panel, equity value (V_t/B_{t-1}) has a positive correlation with F_t/B_{t-1} (0.18), with BIG_t (0.07), with X_t/B_{t-1} (0.42), and with growth, G_t, (0.22). These pairwise correlations are consistent with our expectations. $CORRUPT_t$ has a negative correlation with V_t/B_{t-1} (–0.02), with F_t/B_{t-1} (–0.25), and with BIG_t (–0.36). These correlations are consistent with high level of corruption being associated with firms acquiring lower levels of audit services and

have low equity values.

IV. The Empirical Results

The Relations of Corruption and Independent Audit with Financial Development

Before we present formal tests of hypotheses developed in Section II, we report country-level relations of corruption and independent audit with a country's financial development. Our theoretical model has the implication that high levels of corruption have a negative effect on the development of financial markets and that independent audit has a positive effect on a country's financial development.

To provide empirical evidence on these relations at the country level, we regress a country's stock-market-capitalization-to-GDP ratio and the number-of-listed-firms-to-population ratio on the level corruption and our measure of independent audit (Shleifer and Wolfenzon 2002; Newman et al. 2005). Specifically, we estimate the following two regression models:

$$MC_t = \alpha_0 + \alpha_1 Mean(F_t/V_{t-1}) + \alpha_2 CORRUPT_t + \varepsilon_t, \quad (5)$$

$$NUM_t = \alpha_0 + \alpha_1 Mean(F_t/V_{t-1}) + \alpha_2 CORRUPT_t + \varepsilon_t, \quad (6)$$

where MC_t is the log of the country's ratio of stock market capitalization to gross domestic product in year t; NUM_t is the log of the year-t ratio of the number of domestic firms listed in a given country to its population; $Mean(F_t/V_{t-1})$ is year-t mean value of the ratio of audit fees to lagged market equity in a given country; and $CORRUPT_t$ is year-t corruption index.

We report the results in Table 2. Panel A shows the descriptive statistics of variables of the 333 country-year observations. Panel B shows the pairwise correlation coefficients. Our financial development variables MC_t and NUM_t both have positive correlations with $Mean(F_t/V_{t-1})$

and both have negative correlations with $CORRUPT_t$. In addition, a country's GDP_t per capita has a positive correlation with $Mean(F_t/V_{t-1})$ and a negative correlation with $CORRUPT_t$. We explore this relation further by showing in Figure 1 the scatterplot of the GDP per capita and the $Mean(F_t/V_{t-1})$. A notable feature of the plot is that there is a clustering of countries at the low left corner (low GDP and low audit fee) and another clustering of countries in the up right corner (high GDP and high audit fee).[5] Figure 2, which shows the relation between corruption and the country's GDP per capita, shows a similar (but flipped) pattern with two clusters, with some of the same countries found in the corresponding clusters.

The regression results are reported in Panel C of Table 2. In Column (1) and (2), the results show a positive effect of independent audit on MC_t and a negative impact of corruption on MC_t. In Column (3) and (4), the results show that independent audit has a positive effect and corruption has a negative impact on MC_t.

In summary, our country-level results are consistent with a negative (positive) relation between corruption (independent audit) and financial development, consistent with the empirical literature on corruption reviewed in the Introduction.

The effect of corruption on equity value

Panel A of Table 3 presents the results for the firm-level regression model (1) for the pooled sample and for annual samples. Row 1 shows the result of the regression for the pooled sample. The level of corruption has a negative coefficient (–0.838) and is significant at the 1% level. The result supports our hypothesis H1. In the annual samples, the level of corruption has a negative coefficient in 16 out of 18 years (significant in 14 years at the 5% level or better), supporting our hypothesis that there is a negative effect of corruption on equity value. The

[5] There is a similar clustering of countries in the scatterplot of the GDP per capital and the *Mean* (F_t/B_{t-1}).

coefficients of our control variables X_t/B_{t-1} and G_t are positive, consistent with the accounting based valuation theory (Ohlson 1995).

Panel B of Table 3 presents results for the country-year level regression model (2) for the 333 country-year observations. The results show that there is a significant and negative relation between the level of corruption and country-level market-to-book ratio. This finding supports the hypothesis H1 that equity value decreases with the level of corruption.

The effect of independent audit on equity value

Panel A of Table 4 presents the regression results for the pooled sample and the annual samples for regression model (3). In the pooled sample, audit-fees-to-book ratio has a positive coefficient (1.115) and is significant, consistent with our hypothesis H2. In the annual samples, audit-fees-to-book ratio has a positive coefficient in all years. These results provide strong support to our hypothesis that there is the positive effect of audit fees on equity value. In addition, there is a significant and positive effect of BIG auditor on equity value in the pooled sample and in 16 of 18 annual samples, consistent with the view that BIG auditors' providing higher-quality audit for a given level of audit fee.

Panel B of Table 4 presents the results of regression equation (3) in each country. The audit-fees-to-book ratio is significantly and positively associated with the market-to-book ratio in 25 of 30 countries, in line with the hypothesis that there is a positive effect of audit fees on equity value. A significant and positive association between BIG auditor indicator and equity value in 14 of 30 countries is consistent with the view that BIG auditors' brand names have a positive effect on equity value. The wide variation of the effect of audit fees on equity value across these 30 countries suggests that the value of auditing depends on country-level institutional factors.

The relation of corruption and the disciplining role of independent audit

In this section, we provide empirical evidence on our Hypothesis H3 that independent audit plays a greater disciplining role in protecting investors' interest in countries with higher level of corruption. We perform our test of H3 using a two-stage approach. In the first stage, we estimate regression model (1) for each country-year to obtain the economic effect of independent audit (α_1) on equity value using regression model (1).

Panel A of Table 5 reports The country-level means of α_1 and other variables of our second-stage regression model. New Zealand and South Africa have the lowest means of α_1 (-0.04 and 0.13, respectively), while Poland and Pakistan have the highest means (7.21 and 7.11, respectively). There is a large variation in the means of the corruption index over the sample period, ranging from 0.05 for Denmark to 0.78 for Pakistan. Panel A also shows the means of our control variables including legal origin, security law enforcement index, shareholders' rights, creditors' rights, the quality of accounting standards, and state-owned enterprise index.

Panel B of table 5 reports the pair-wise correlation coefficients of the variables. As shown in the panel, α_1 has a significant and positive correlation with the corruption index ($CORRUPT_t$) (0.38). It also has positive correlation with *ANTDIR*, *CREDIT*, and *SOE*, but negative correlation with *EFFJUD*, *ACC* and *GDP*. In contrast, $CORRUPT_t$ has a positive correlation with *COMMON*, *ANTDIR*, *CREDIT* and *SOE*, but negative correlation with *EFFJUD*, and *GDP*.

Panel C of Table 5 presents the results for regression equation (4). We first run α_1 on $CORRUPT_t$ without control variables. The result is reported in column 1. As column 1 shows, corruption index ($CORRUPT_t$) has a significant positive coefficient (4.058), consistent with H3. To examine whether this effect of corruption is distinct from other country-specific governance variables, we regress α_1 on the corruption index ($CORRUPT_t$) controlling for each one of the

institutional variables, as well as for all these variables as a group. The results are reported in columns 2–8. As columns 2–8 show, the coefficient of $CORRUPT_t$ remains largely unchanged. We include all the institutional variables in the α_1 regression model. The result is reported in column 9. As column 9 shows, the coefficient of $CORRUPT_t$ is positive and significant at the 1% level. We further control all the institutional variables and the level of economic development, GDP_t, and report the results in column 10. Column 10 shows that $CORRUPT_t$ is positive and significant at the 5% level. We interpret these findings as the evidence supporting our hypothesis that the disciplining effect of independent audit is greater in countries characterized by higher levels of corruption. This finding is consistent with prior finding that the value added by Big Four audit firms is higher in the IPO market in countries with less investor protection (Fan and Wong 2005; Choi and Wong 2007).

We performed a number of robustness checks. In particular, to ensure that our results are not driven by certain countries in our sample, we perform additional tests by dropping US observations and by dropping countries with the small number of observations. Our results are not affected.

V. Conclusions

In this paper, we examine the opposing effects of corruption and independent audit on equity value. To guide our empirical analysis, we present a simple model where auditors have no direct effect on corrupt government officials and show that independent audit deters corporate insiders from diverting the firm's resources for their personal use and thereby increases equity value. Further, the disciplining effect of independent audit is stronger in more corrupt environments.

Unlike other corporate governance mechanisms, auditors have an explicit mandate to protecting minority shareholders from the opportunistic actions of corporate insiders (managers

and controlling shareholders). In particular, auditors are required to scrutinize transactions with related parties. Because such transactions serve as a preferred means of "tunneling" the funds, auditors make it more difficult for insiders to divert corporate resources for personal use. Therefore, independent audit has a positive effect on the firm's cash flows accruing to minority shareholders. It follows that auditing enters the valuation function through the more direct numerator effect—which is distinct from the denominator effect that works through lowering the cost of capital by reducing the information risk. Although the literature to date has investigated the latter, it has paid only limited attention to the former. One of the goals of this paper is take a step in this direction.

Our empirical results based on audit fees from 30 countries over the period 1995–2012 are consistent with the theoretical predictions. Specifically, we report that corruption has a negative effect and independent audit has a positive effect on equity valuation and financial development. We also report evidence that auditing plays a stronger disciplining role in countries with higher levels of corruption. One implication of our study is that, even though deterring corrupt government officials from interfering in business activities is outside auditors' purview, independent audit can play an important role in reducing the detrimental effects of corruption on economic development. The analytical literature (e.g., Andvig and Moene 1990; Blackburn et al. 2006; Cadot 1987) suggests that, by mitigating the consequences of corruption, auditing can affect the general public's perception of its prevalence and thereby play a role in reducing it. We believe that investigating this role of independent auditing charts a promising area for future research.

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Table 1
Descriptive statistics of the sample

This table reports the distributional statistics of the following variables for the pooled sample (Panel A), for annual samples (Panel B), for country samples (Panel C) and the correlations between the variables for pooled sample (Panel D). The market-to-book ratio (V_t/B_{t-1}) is year t market equity divided by beginning-of-period book equity; the audit fees-to-book ratio (F_t/B_{t-1}) is year t audit fees divided by beginning-of-period book equity; the BIG N auditor indicator (BIG_t) is 1 if firm hires a BIG N auditor, 0 otherwise; the earnings-to-book ratio (X_t/B_{t-1}) is year t earning divided by beginning-of-period book equity; the annual sales growth rate (G_t) is year t sales minus beginning-of-period sales divided by beginning-of-period sales; $CORRUPT_t$ is year t corruption index, defined by one minus Heritage Foundation Corruption Index/100; the index is based on quantitative data that assess the perception of corruption in the business environment, including levels of governmental, legal, judicial and administrative corruption; the index ranges from 0 (low corruption) to 1 (high corruption). The pooled sample consists of 87,263 firm-year observations from 31 countries over 1995-2012.

Panel A: Descriptive statistics for the pooled sample

Variable	*N*	*Mean*	*Median*	*Std dev*	*25%*	*75%*
V_t/B_{t-1}	87,263	2.35	1.61	2.27	0.90	2.93
$F_t/B_{t-1}(\%)$	87,263	0.37	0.22	0.43	0.09	0.47
BIG_t	87,263	0.72	1.00	0.45	0.00	1.00
X_t/B_{t-1}	87,263	0.10	0.10	0.18	0.02	0.19
G_t	87,263	0.14	0.09	0.31	-0.02	0.23
$CORRUPT_t$	87,263	0.30	0.25	0.18	0.19	0.29

Panel B: Descriptive statistics of the overall annual samples for audit fees related variables

	Full			*NON-BIG Auditors*			*BIG Auditors*		
Year	F_t	F_t/B_{t-1}	*N*	F_t	F_t/B_{t-1}	*N*	F_t	F_t/B_{t-1}	*N*
1995	0.89	0.34	723	0.10	0.35	166	1.12	0.33	557
1996	0.88	0.29	1,010	0.10	0.26	233	1.11	0.30	777
1997	0.78	0.29	1,147	0.11	0.28	253	0.96	0.30	894
1998	0.84	0.29	1,122	0.10	0.25	246	1.05	0.30	876
1999	1.06	0.32	1,227	0.10	0.32	266	1.32	0.32	961
2000	0.68	0.32	3,227	0.12	0.46	467	0.77	0.29	2,760
2001	0.53	0.31	4,071	0.11	0.42	674	0.61	0.29	3,397
2002	0.61	0.36	4,522	0.12	0.47	880	0.73	0.33	3,642
2003	0.73	0.38	4,689	0.12	0.46	1,025	0.89	0.35	3,664
2004	1.19	0.48	5,189	0.19	0.50	1,269	1.51	0.47	3,920
2005	1.22	0.48	5,473	0.25	0.53	1,532	1.60	0.46	3,941
2006	1.34	0.48	5,991	0.32	0.54	1,722	1.76	0.45	4,269
2007	1.32	0.45	6,853	0.29	0.48	2,334	1.85	0.43	4,519
2008	1.15	0.36	8,022	0.28	0.39	2,655	1.59	0.34	5,367
2009	1.22	0.33	7,889	0.30	0.35	2,498	1.64	0.33	5,391
2010	1.18	0.34	8,585	0.29	0.36	2,694	1.58	0.33	5,891
2011	1.18	0.33	9,251	0.28	0.35	3,057	1.63	0.32	6,194
2012	1.24	0.29	8,272	0.31	0.30	2,668	1.69	0.29	5,604

Panel C: Country-Level Descriptive Statistics

Country	V_t/B_{t-1}	F_t/B_{t-1}(%)	BIG_t	X_t/B_{t-1}	G_t	$CORRUPT_t$	F_t	*N*
Australia	2.65	0.52	0.71	0.11	0.23	0.14	0.71	3,968
Austria	1.86	0.19	0.74	0.11	0.12	0.21	0.52	50
Belgium	2.19	0.31	0.76	0.14	0.07	0.28	1.31	195
Canada	2.55	0.39	0.93	0.08	0.19	0.14	1.34	1,935
China	2.83	0.13	0.40	0.13	0.24	0.65	0.44	3,301
Denmark	2.28	0.49	0.97	0.10	0.10	0.05	1.13	862
Finland	2.44	0.37	0.99	0.10	0.07	0.07	1.27	397
France	2.08	0.49	0.62	0.10	0.10	0.29	3.04	1,405
Germany	2.14	0.40	0.73	0.11	0.10	0.20	1.94	1,398
Hong Kong	1.74	0.31	0.71	0.09	0.16	0.19	0.41	5,732
India	2.32	0.14	0.16	0.17	0.18	0.69	0.09	7,518
Ireland	2.00	0.34	0.95	0.11	0.12	0.23	1.43	98
Israel	2.32	0.42	0.82	0.11	0.14	0.39	0.58	172
Italy	1.70	0.31	0.90	0.06	0.07	0.53	1.16	516
Japan	1.20	0.22	0.83	0.06	0.09	0.24	0.81	6,833
Korea	1.46	0.09	0.69	0.08	0.15	0.46	0.12	339
Malaysia	1.45	0.12	0.62	0.08	0.13	0.49	0.10	5,631
Netherlands	1.96	0.36	0.90	0.09	0.05	0.11	3.12	177
New Zealand	2.44	0.30	0.97	0.15	0.14	0.06	0.39	555
Norway	2.32	0.31	0.94	0.11	0.17	0.13	1.07	638
Pakistan	2.19	0.06	0.83	0.22	0.11	0.77	0.04	658
Poland	1.97	0.07	0.59	0.14	0.12	0.50	0.19	153
Portugal	1.69	0.23	0.90	0.08	-0.03	0.41	0.95	42
Singapore	1.65	0.26	0.85	0.10	0.14	0.08	0.28	2,818
South Africa	2.83	0.47	0.86	0.23	0.15	0.51	1.07	1,315
Spain	2.92	0.24	0.84	0.14	0.13	0.33	2.11	538
Sweden	2.94	0.52	0.98	0.13	0.13	0.07	1.93	1,089
Switzerland	2.57	0.38	0.95	0.11	0.10	0.11	2.14	758
United Kingdom	2.68	0.65	0.70	0.12	0.15	0.16	1.20	7,192
United States	2.76	0.46	0.82	0.08	0.11	0.25	1.70	30,980

Panel D: Correlation Matrix for the Pooled Sample

	V_t/B_{t-1}	F_t/B_{t-1}	BIG_t	X_t/B_{t-1}	G_t
F_t/B_{t-1}	**0.18**				
BIG_t	**0.07**	**-0.05**			
X_t/B_{t-1}	**0.42**	**-0.08**	**0.06**		
G_t	**0.22**	**0.04**	**-0.04**	**0.18**	
$CORRUPT_t$	**-0.02**	**-0.25**	**-0.36**	**0.10**	**0.03**

All coefficients are significant at the 5% level or better.

Table 2: The Relation of Financial Development with Corruption and Independent Audit

This table reports the descriptive statistic of variables in panel A, correlation matrix in panel B, and the regression results in panel C. The regression models are as follows:

$MC_t = \alpha_0 + \alpha_1 Mean(F_t/V_{t-1}) + \alpha_2 CORRUPT_t + \varepsilon_t$,

$NUM_t = \alpha_0 + \alpha_1 Mean(F_t/V_{t-1}) + \alpha_2 CORRUPT_t + \varepsilon_t$,

where MC_t is the log of the year-t ratio of stock market capitalization to gross domestic product; $Mean(F_t/V_{t-1})$ is year t mean value of ratio of audit fees to lagged market equity in a given country; NUM_t is the log of the year-t ratio of the number of domestic firms listed in a given country to its population (in millions); GDP_t is year-t logarithm of per capita Gross Domestic Product in a given country; $CORRUPT_t$ is year t corruption index, defined by one minus Heritage Foundation Corruption Index/100; the index is based on quantitative data that assess the perception of corruption in the business environment, including levels of governmental, legal, judicial and administrative corruption; the index ranges from 0 (low corruption) to 1 (high corruption). Standard errors are heteroskedasticity robust. ***, ** and * denote coefficients significantly different from zero at the 1%, 5% and 10% levels, respectively.

Panel A: Descriptive Statistic

Variable	*N*	*Mean*	*Median*	*Std dev*	*25%*	*75%*
MC_t	333	-0.18	-0.11	0.78	-0.71	0.35
NUM_t	333	3.19	3.49	1.16	2.42	3.81
$MEAN(F_t/V_{t-1})$	333	0.23	0.22	0.12	0.13	0.31
$CORRUPT_t$	333	0.29	0.22	0.23	0.10	0.48
GDP_t	333	9.76	10.36	1.40	9.42	10.67

Panel B: Correlation Matrix

	MC_t	NUM_t	$MEAN(F_t/V_{t-1})$	$CORRUPT_t$
NUM_t	0.54			
$MEAN(F_t/V_{t-1})$	0.33	0.34		
$CORRUPT_t$	-0.33	-0.70	-0.49	
GDP_t	0.29	0.60	0.49	-0.87

Panel C: Regressions

	(1) MC_t	*(2)* MC_t	*(3)* NUM_t	*(4)* NUM_t
$MEAN(F_t/V_{t-1})$	2.068***	1.392***	3.217***	0.057
	(6.38)	(3.83)	(6.68)	(0.14)
$CORRUPT_t$		-0.754***		-3.525***
		(-3.84)		(-15.53)
$CORRUPT_t * MEAN(F_t/V_{t-1})$				
Constant	-0.656***	-0.283**	2.449***	4.192***
	(-7.78)	(-2.22)	(19.55)	(28.47)
N	333	333	333	333
Adj-R^2	0.107	0.143	0.116	0.488

Table 3: The Impact of Corruption on Equity Value

This table reports the results from the following regression models:

$V_t/B_{t-1} = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 X_t/B_{t-1} + \alpha_3 G_t + \varepsilon_t$,

$Mean(V_t/B_{t-1}) = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 Mean(X_t/B_{t-1}) + \alpha_3 Mean(G_t) + \varepsilon_t$,

where V_t/B_{t-1} is year-t market equity divided by beginning-of-period book equity; $CORRUPT_t$ is year-t corruption index, X_t/B_{t-1} is year-t earnings divided by beginning-of-period book equity; G_t is year-t sales minus beginning-of-period sales divided by beginning-of-period sales. $Mean(V_t/B_{t-1})$ is year-t mean value of the ratio of market equity to beginning-of-period book equity in a given country; $Mean(X_t/B_{t-1})$ is year-t mean value of the ratio of earnings to beginning-of-period book equity in a given country; $Mean(G_t)$ is year-t mean value of sales growth in a given country. Standard errors are heteroskedasticity robust; ∗∗∗, ∗∗ and ∗ denote coefficients significantly different from zero at the 1%, 5% and 10% levels, respectively.

Panel A: Firm-Level Regressions

$V_t/B_{t-1} = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 X_t/B_{t-1} + \alpha_3 G_t + \varepsilon_t$.

Year	α_0	α_1	α_2	α_3	*N*	*Adj-R^2*
Pooled	1.952***	*-0.838****	4.937***	1.108***	87,263	0.205
1995	1.231***	*0.881****	9.284***	0.161	723	0.395
1996	1.708***	*-0.695****	7.835***	1.146***	1,010	0.321
1997	1.697***	*-0.728****	6.957***	1.012***	1,147	0.283
1998	1.395***	*-0.959****	8.089***	0.671**	1,122	0.342
1999	1.492***	*-0.980****	8.575***	0.981***	1,227	0.292
2000	1.953***	*-0.436*	4.297***	1.617***	3,227	0.151
2001	2.506***	*-1.747****	3.630***	1.425***	4,071	0.146
2002	2.089***	*-1.744****	4.169***	0.993***	4,522	0.224
2003	2.565***	*-1.731****	4.255***	0.805***	4,689	0.147
2004	2.369***	*-1.332****	5.224***	0.895***	5,189	0.219
2005	2.434***	*-1.297****	5.154***	1.153***	5,473	0.206
2006	2.297***	*-0.256*	5.100***	1.342***	5,991	0.205
2007	2.186***	*-0.581****	5.012***	1.626***	6,853	0.214
2008	1.164***	*0.282***	4.047***	0.895***	8,022	0.219
2009	1.754***	*-0.604****	4.399***	0.759***	7,889	0.184
2010	1.787***	*-0.484****	5.196***	0.995***	8,585	0.209
2011	1.654***	*-0.832****	5.122***	0.460***	9,251	0.199
2012	1.586***	*-0.599****	5.059***	0.781***	8,272	0.203

Panel B: Country-Year Level Regression

$Mean(V_t/B_{t-1}) = \alpha_0 + \alpha_1 CORRUPT_t + \alpha_2 Mean(X_t/B_{t-1}) + \alpha_3\, Mean(G_t) + \varepsilon_t$.

	α_0	α_1	α_2	α_3	*N*	*Adj-R^2*
	1.379***	-0.903***	7.658***	2.045***	333	0.455

Table 4: The Effect of Audit Quality on Equity Value

This table reports the results from the following regression model:

$V_t/B_{t-1} = \alpha_0 + \alpha_1 F_t/B_{t-1} + \alpha_2 BIG_t + \alpha_3 X_t/B_{t-1} + \alpha_4 G_t + \varepsilon_t$,

where V_t/B_{t-1} is year t market equity divided by beginning-of-period book equity; F_t/B_{t-1} is year-t audit fees divided by beginning-of-period book equity; BIG_t is set to 1 if the firm hires a Big Four auditor and 0 otherwise; X_t/B_{t-1} is year-t earnings divided by beginning-of-period book equity; G_t is year-t sales minus beginning-of-period sales divided by beginning-of-period sales. Standard errors are heteroskedasticity robust; ∗∗∗, ∗∗ and ∗ denote coefficients significantly different from zero at the 1%, 5% and 10% levels, respectively.

Panel A: Effects of Audit Quality on Equity Value for Annual Samples and the Pooled Sample

$V_t/B_{t-1} = \alpha_0 + \alpha_1 F_t/B_{t-1} + \alpha_2 BIG_t + \alpha_3 X_t/B_{t-1} + \alpha_4 G_t + \varepsilon_t$.

Year	α_0	α_1	α_2	α_3	α_4	*N*	*Adj-R^2*
Pooled	1.069***	*1.115***	0.309***	5.042***	1.039***	87,263	0.248
1995	1.205***	*0.393**	0.138	9.432***	0.185	723	0.390
1996	0.988***	*0.631****	0.519***	7.477***	1.135***	1,010	0.333
1997	1.001***	*0.733****	0.429***	6.528***	0.959***	1,147	0.296
1998	0.599***	*0.864****	0.399***	7.614***	0.636**	1,122	0.358
1999	0.597***	*0.962****	0.468***	7.964***	0.955***	1,227	0.312
2000	0.960***	*0.671****	0.784***	4.273***	1.616***	3,227	0.167
2001	1.185***	*0.637****	0.808***	3.570***	1.388***	4,071	0.160
2002	1.031***	*0.776****	0.434***	4.138***	0.942***	4,522	0.239
2003	1.178***	*1.153****	0.639***	4.274***	0.705***	4,689	0.190
2004	1.134***	*1.343****	0.310***	5.486***	0.774***	5,189	0.298
2005	1.157***	*1.261****	0.410***	5.412***	1.054***	5,473	0.270
2006	1.571***	*1.113****	0.128*	5.533***	1.246***	5,991	0.252
2007	1.456***	*0.894****	0.211***	5.191***	1.581***	6,853	0.240
2008	1.008***	*0.809****	-0.103**	4.269***	0.896***	8,022	0.253
2009	1.023***	*1.092****	0.252***	4.492***	0.645***	7,889	0.235
2010	1.070***	*1.213****	0.187***	5.402***	1.021***	8,585	0.257
2011	0.891***	*1.198****	0.128***	5.257***	0.484***	9,251	0.246
2012	0.849***	*1.198****	0.265***	5.156***	0.761***	8,272	0.253

Panel B: Effects of Audit Quality on Equity Value for country samples

$V_t/B_{t-1} = \alpha_0 + \alpha_1 F_t/B_{t-1} + \alpha_2 BIG_t + \alpha_3 X_t/B_{t-1} + \alpha_4 G_t + \varepsilon_t.$

Country	α_0	α_1	α_2	α_3	α_4	*N*	*Adj-R^2*
Australia	1.398***	*0.643****	0.197**	5.179***	0.926***	3,968	0.268
Austria	0.682	*2.471*	0.456	1.751	1.435	50	0.147
Belgium	1.595***	*0.080*	-0.154	4.451***	0.905	195	0.215
Canada	1.648***	*1.065****	-0.108	3.502***	1.527***	1,935	0.200
China	2.098***	*0.601****	-0.957***	7.556***	0.252*	3,301	0.204
Denmark	0.404*	*0.573***	1.048***	4.764***	1.082***	862	0.178
Finland	1.547***	*1.219****	-0.326	6.792***	0.749	397	0.381
France	1.140***	*0.836****	-0.243***	4.983***	1.870***	1,405	0.341
Germany	0.892***	*0.663****	0.494***	5.050***	0.828***	1,398	0.281
Hong Kong	0.827***	*1.743****	-0.049	3.353***	0.713***	5,732	0.185
India	0.720***	*1.668****	0.961***	6.428***	0.676***	7,518	0.297
Ireland	-0.488	*1.268*	1.542***	4.048***	1.273***	98	0.341
Israel	0.883***	*0.864**	0.576**	5.169***	0.293	172	0.434
Italy	1.018***	*1.860****	-0.246	4.169***	0.830**	516	0.250
Japan	0.567***	*0.942****	0.112***	4.932***	0.450***	6,833	0.337
Korea	0.664***	*4.019****	0.058	3.719***	0.749	339	0.182
Malaysia	0.843***	*1.134****	0.043	5.300***	0.294***	5,631	0.249
Netherlands	0.741***	*0.445**	0.646***	5.280***	0.031	177	0.398
New Zealand	0.341**	*0.041*	0.298*	11.625***	0.256	555	0.615
Norway	0.910***	*1.806****	0.415***	3.101***	0.681***	638	0.172
Pakistan	0.152	*4.570****	0.506***	5.753***	0.336	658	0.415
Poland	-0.002	*7.059****	-0.010	10.138***	0.304	153	0.654
Portugal	2.097**	*0.239*	-0.960	5.142**	0.993	42	0.270
Singapore	1.031***	*0.695****	-0.106	4.942***	0.356***	2,818	0.261
South Africa	0.602***	*0.298**	0.063	8.495***	0.270	1,315	0.475
Spain	1.070***	*1.071***	0.644***	6.100***	1.506***	538	0.281
Sweden	3.940***	*0.700****	-2.354***	5.167***	1.861***	1,089	0.294
Switzerland	0.722**	*1.355****	0.411	7.905***	0.437	758	0.402
United Kingdom	0.851***	*0.989****	0.567***	5.044***	1.271***	7,192	0.294
United States	1.334***	*0.922****	0.544***	4.731***	1.647***	30,980	0.231

Table 5: Corruption and the Value Added by Independent Audit

This table reports the descriptive statistic in panel A, correlation matrix in panel B, and the regression results in panel C. The regression models are followed:

$$\alpha_1 = \lambda_0 + \lambda_1 CORRUPT_t + \lambda_2 COMMON + \lambda_3 SECLAW + \lambda_4 ANTDIR + \lambda_5 CREDIT + \lambda_6 EFFJUD + \lambda_7 ACC + \lambda_8 SOE + \lambda_9 GDP_t + \varepsilon_t,$$

where α_1 is the coefficients of ratio of audit fees to lagged book equity (F_t/B_{t-1}) by estimating the regression model (1) $V_t/B_{t-1} = \alpha_0 + \alpha_1 F_t/B_{t-1} + \alpha_2 BIG_t + \alpha_3 X_t/B_{t-1} + \alpha_4 G_t + \varepsilon_t$ within each country-year; $CORRUPT_t$ is year t corruption index, defined by one minus Heritage Foundation Corruption Index/100; the index is based on quantitative data that assess the perception of corruption in the business environment, including levels of governmental, legal, judicial and administrative corruption; the index ranges from 0 (low corruption) to 1 (high corruption); source: Heritage Foundation; COMMON is an indicator variable coded one if the legal origin of the company law or commercial code of the country is English common law and zero otherwise; Source: La Porta et al. 1998; SECLAW is the index of security law enforcement, defined as the arithmetic mean of: (1) disclosure Index, (2) burden of proof index, and (3) public enforcement index; the index ranges from 0 (weak security law enforcement) to 1 (strong security law enforcement); Source: La Porta et al. (2006); *ANTDIR* is an index measuring the anti-director rights of shareholders in the country, formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to ten percent (the sample median); or (6) when shareholders have preemptive rights that can only be waived by a shareholders meeting; the index ranges from 0 (weak anti-director rights) to 5 (strong anti-director rights); Source: La Porta et al. 1998; CREDIT is an index measuring creditors' rights, formed by adding one when: (1) the country imposes restrictions, such as creditors' consent or minimum dividends, to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; (4) the debtor does not retain the administration of its property pending the resolution of the reorganization; The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights); Source: La Porta et al. 1998; EFFJUD is an index measuring efficiency of the judiciary, formed by the assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms; it may be taken to represent investors' assessment of conditions in the country in question; average between 1980 and 1983; the index ranges from 0 (low efficiency) to 10 (high efficiency); Source: La Porta et al. 1998; ACC is an index measuring the quality of a country's accounting standards, created by examining and rating companies' annual reports on their inclusion or omission of 90 items; these items fall into seven categories, including general information, income statements, balance sheets, funds flow statements, accounting standards, stock data, and special items; a higher index indicates higher quality of accounting standards; Source: La Porta et al. 1998; SOE is an index of SOEs in the economy; the index ranges from 0 (less government-owned enterprises) to 10 (more government-owned enterprises); La Porta et al. (2002); GDP_t is year t logarithm of per capita Gross Domestic Product in a given country; source: world bank; Standard errors are heteroskedasticity robust. ***, ** and * denote coefficients significantly different from zero at the 1%, 5% and 10% levels, respectively.

Panel A: Descriptive Statistics

Country	N	α_1	$CORRUPT_t$	GDP_t	*COMMON*	*SECLAW*	*ANTDIR*	*CREDIT*	*EFFJUD*	*CIFAR*	*SOE*
Australia	18	0.38	0.15	10.34	1	0.77	4	1	10	80	4
Austria	2	0.94	0.21	10.79	0	0.18	2	3	9.5	62	8
Belgium	6	0.45	0.28	10.70	0	0.35	0	2	9.5	68	4
Canada	9	1.14	0.13	10.65	1	0.93	5	1	9.25	75	4
China	13	0.70	0.66	7.72	-	-	-	-	-	-	-
Denmark	17	0.48	0.05	10.67	0	0.54	2	3	10	75	6
Finland	8	0.92	0.06	10.70	0	0.50	3	1	10	83	4
France	9	0.97	0.30	10.56	0	0.59	3	0	8	78	5.2
Germany	7	0.60	0.20	10.61	0	0.22	1	3	9	67	4
Hong Kong	18	1.52	0.20	10.23	1	0.82	5	4	10	73	0
India	18	2.93	0.72	6.54	1	0.77	5	4	8	61	9.6
Ireland	4	0.88	0.24	10.83	1	0.50	4	1	8.75	81	6
Israel	6	0.44	0.39	10.19	1	0.69	3	4	10	74	8
Italy	7	1.32	0.53	10.46	0	0.42	1	2	6.75	66	8
Japan	8	2.06	0.26	10.58	0	0.47	4	2	10	71	2
Korea	2	4.98	0.46	10.02	0	0.57	2	3	6	68	4
Malaysia	18	2.53	0.48	8.61	1	0.81	4	4	9	79	4.8
Netherlands	4	0.40	0.11	10.77	0	0.63	2	2	10	74	4
New Zealand	16	-0.04	0.06	10.03	1	0.50	4	3	10	80	3.6
Norway	17	2.88	0.13	10.95	0	0.47	4	2	10	75	8
Pakistan	17	7.11	0.78	6.52	1	0.51	5	4	5	73	7.2
Poland	3	7.21	0.50	9.46	-	-	-	-	-	-	-
Portugal	2	1.91	0.41	10.00	0	0.53	3	1	5.5	56	8
Singapore	18	0.82	0.08	10.29	1	0.85	4	4	10	79	2
South Africa	18	0.13	0.51	8.39	1	0.60	5	3	6	79	6
Spain	10	0.61	0.33	10.26	0	0.51	4	2	6.25	72	6
Sweden	13	0.59	0.07	10.62	0	0.45	3	2	10	83	6
Switzerland	10	1.23	0.11	11.03	0	0.44	2	1	10	80	2
United Kingdom	18	0.98	0.15	10.34	1	0.72	5	4	10	85	4.8
United States	18	1.00	0.23	10.56	1	0.96	5	1	10	76	2

Panel B: Correlation Matrix

	α_1	$CORRUPT_t$	$COMMON$	$SECLAW$	$ANTDIR$	$CREDIT$	$EFFJUD$	$CIFAR$	SOE
$CORRUPT_t$	**0.38**								
$COMMON$	0.08	**0.30**							
$SECLAW$	-0.03	0.03	**0.71**						
$ANTDIR$	**0.19**	**0.29**	**0.75**	**0.63**					
$CREDIT$	**0.22**	**0.36**	**0.45**	**0.14**	**0.29**				
$EFFJUD$	**-0.32**	**-0.79**	-0.08	**0.22**	**-0.18**	**-0.16**			
ACC	**-0.23**	**-0.53**	**0.15**	**0.13**	**0.14**	**-0.15**	**0.36**		
SOE	**0.24**	**0.53**	**-0.17**	**-0.35**	-0.05	**0.13**	**-0.49**	**-0.38**	
GDP_t	**-0.38**	**-0.87**	**-0.47**	**-0.12**	**-0.45**	**-0.53**	**0.66**	**0.37**	**-0.48**

Panel C: Country-Level F_t/B_{t-1}-Coefficient Regressions

$$\alpha_1 = \lambda_0 + \lambda_1 CORRUPT_t + \lambda_2 COMMON + \lambda_3 SECLAW + \lambda_4 ANTDIR + \lambda_5 CREDIT + \lambda_6 EFFJUD + \lambda_7 ACC + \lambda_8 SOE + \lambda_9 GDP_t + \varepsilon_t.$$

	(1) α_1	(2) α_1	(3) α_1	(4) α_1	(5) α_1	(6) α_1	(7) α_1	(8) α_1	(9) α_1	(10) α_1
$CORRUPT_t$	4.058***	4.712***	4.549***	4.292***	4.236***	4.657***	4.462***	4.400***	5.196***	2.982**
	(7.46)	(8.10)	(8.20)	(7.41)	(7.14)	(5.14)	(6.84)	(6.74)	(4.12)	(2.01)
$COMMON$		-0.271							-1.397***	-1.734***
		(-1.02)							(-2.72)	(-3.31)
$SECLAW$			-0.610						-1.223	-0.793
			(-0.90)						(-1.03)	(-0.67)
$ANTDIR$				0.144					0.575***	0.490***
				(1.41)					(3.64)	(3.07)
$CREDIT$					0.147				0.233*	0.116
					(1.38)				(1.94)	(0.92)
$EFFJUD$						0.022			0.155	0.173
						(0.17)			(1.07)	(1.21)
ACC							-0.005		-0.001	0.001
							(-0.20)		(-0.02)	(0.02)
SOE								0.023	-0.046	-0.088
								(0.38)	(-0.69)	(-1.30)
GDP_t										-0.596***
										(-2.75)
$Constant$	0.275	0.308	0.572	-0.295	-0.115	-0.042	0.580	0.114	-2.289	4.695
	(1.37)	(1.36)	(1.22)	(-0.75)	(-0.39)	(-0.03)	(0.30)	(0.41)	(-0.82)	(1.25)
N	333	318	318	318	318	318	318	318	318	318
$Adj\text{-}R^2$	0.141	0.172	0.171	0.175	0.174	0.169	0.169	0.170	0.201	0.218

Figure 1. Scatterplot of a country's GDP per capital and audit fees-to-book-equity ratio

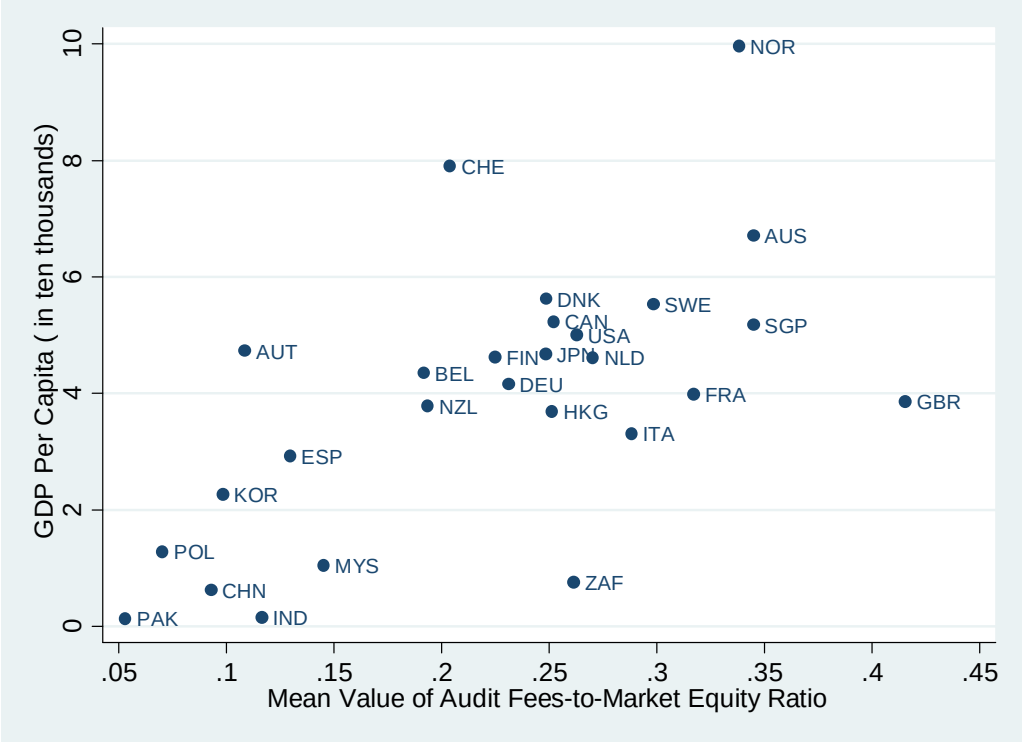

Figure 2. Scatterplot of a country's GDP per capital and corruption index