

The Relative Importance of Firm Incentives versus Country Factors in the Demand for Assurance Services by Private Entities*

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1. Introduction

Agency theory views the firm as a nexus of contracts in which information asymmetry exists and creates a conflict of interest between contracting parties (Alchian and Demsetz 1972; Jensen and Meckling 1976). In the limit, contracting will not occur if information asymmetry is not sufficiently resolved, and in this scenario agency problems can be mitigated and contracting facilitated by governance mechanisms like accounting and auditing. Specifically, accounting reports increase a firm's transparency, and audits can be used for ex post monitoring and enforcement of contracts (Watts and Zimmerman 1983).¹

While important, the seminal agency research does not recognize that the contracting environment varies across countries, which in turn will influence the nature of contracts in place and the related demand for governance mechanisms (La Porta, Lopez-de-Silanes, Shleifer, and Vishny 2000). Agency theory was formulated in the context of modern U.S. corporate ownership in which there is widespread separation of ownership and control and a diversified ownership structure with limited ownership concentration by individuals. The seminal agency literature assumes that the United States has a strong legal system and

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1. Empirical agency research has documented an association between firm characteristics that give rise to information asymmetry between the firm and contracting parties, and the mitigation of these agency problems through auditing. This research has mainly examined listed companies. For example, Chow (1982) provides evidence that agency-related firm characteristics explain why U.S. listed firms voluntarily had independent audits in the 1920s before such audits were required by federal securities laws. Other studies of publicly listed firms document an association between a firm's agency costs and the use of a higher-quality auditor as external monitor (e.g., Francis and Wilson 1988; Johnson and Lys 1990; Piot 2001; DeFond 1992; Francis, Maydew, and Sparks 1999). In addition, there are studies of voluntary audits for private firms such as Carey, Simnett, and Tanewski 2000 in Australia, Hay and Davis 2004 in New Zealand, and Senkow, Rennie, Rennie, and Wong 2001 in Canada, while Blackwell, Noland, and Winters (1998) and Kim, Simunic, Stein, and Yi (2009) document an association between cost of debt and voluntary audit using private firms in the United States and Korea, respectively.

other institutions in place that provide a high level of investor protection and which lead to the kind of ownership structure and related contracting and monitoring articulated in the agency literature. However, this is not universally the case around the world. Reese and Weisbach (2002:66) explain the influence of a country's legal regime on contracting:

An implicit but often unrecognized part of any financial contract is the ability of a legal system to enforce it. The quality of legal protection affects the ability of parties to expropriate resources from one another ex post, and thus influences the contracts that will be observed ex ante. Differences across countries in the quality of protection they provide claimholders should, by this logic, lead to observable differences in financial contracting.

In other words, the contracting process we observe in the United States, including the use of accounting and auditing to mitigate agency problems, is in part a consequence of the high quality of investor protection. However, in countries with weak investor protection, a firm with financing needs may be unable to credibly reduce information asymmetry even though it would like to do so in order to obtain external financing.²

The importance of country-level factors on the contracting environment leads to the central question our paper investigates, namely, is voluntary use of assurance services of accounting information a complement to strong institutions on a country? Or, alternatively, is voluntary use of assurance services a substitute for weak institutions?³ In other words, is there more voluntary use of assurance services by private firms when a country's institutions are strong and protect investor rights, which in turn facilitates private contracting? Or, alternatively, is voluntary use of assurance services more likely to occur as a substitute for weak country-level institutions that do not adequately protect investors? These competing theoretical views are articulated in recent papers by Durnev and Kim 2005 and Doidge, Karolyi, and Stulz 2007 and are discussed in more detail in section 2.

The data in the study come from the World Business Environment Survey (WBES) of 80 countries carried out by the World Bank in late 1999 and early 2000 (World Bank 2002). As part of the survey, each entity was asked: "Does your firm provide its shareholders with annual financial statements that have been reviewed by an external auditor?" Because no further explanation was given to the meaning of this question, it is possible that the WBES survey question encompasses not only independent audits but also other more limited forms of external assurance such as a review. For this reason we use the broader term *assurance services* to denote those firms in the survey that provided owners with financial statements that were reviewed by an external auditor.

A unique feature of our study is that we examine *private* entities in the WBES data set. Kim et al. (2009) point out that a control sample of unaudited firms is needed to assess the incremental economic value of audits, and this condition exists only for private

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2. Consistent with this argument, we know there are fewer publicly listed firms in countries with weak investor protection and that the publicly listed firms that do exist in these countries have more concentrated ownership structures, less outside (minority) shareholdings, and rely more on private debt financing compared to U.S. firms (La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1998, 2000).
 3. Recent accounting research recognizes that accounting practices are influenced by a country's institutions and has generally concluded that the quality of accounting practices in a country is complementary to the strength of a country's underlying institutions. For example, Ball (2001) and Kothari (2000) point out that, in countries without a strong legal infrastructure, the role of accounting and auditing in contracting is minimal. As a consequence, other institutional mechanisms may emerge to address agency conflicts such as "relational financing". A number of studies show that the quality of corporate governance and accounting practices are positively associated with the strength of a country's legal system and other institutions with respect to the protection of investor rights (La Porta et al. 1998; Ball, Kothari, and Robin 2000; La Porta et al. 2000; Hung 2000; Leuz 2001; Ball, Robin, and Wu 2003; Francis, Khurana, and Pereira 2003; Leuz, Nanda, and Wysocki 2003; Choi and Wong 2007; Francis and Wang 2008).

entities that are not required to have statutory audits. More generally, the advantage of using private entities is that it provides a setting in which governance choices can be investigated as a voluntary economic decision rather than the consequence of regulatory mandates (Ball and Shivakumar 2005; Katz 2009).

Kim et al. (2009) emphasize a second reason for studying private entities. Accounting research in general and cross-country research in particular is dominated by the analysis of listed companies. However, small firms (defined as those with fewer than 500 employees) generate around 50 percent of private-sector nonfarm gross domestic product (GDP) in the United States (Small Business Administration 2007) and represent a corresponding share of the private debt market (Kim et al. 2009). Despite the importance of smaller entities to the economy and capital markets, surprisingly little is known about these firms with respect to their accounting and auditing choices or the economic consequence of these choices. Recent research has begun to examine the value of an audit for private companies and its effect on the cost of debt (e.g., Blackwell et al. 1998; Fortin and Pittman 2007; Allee and Yohn 2009; Kim et al. 2009). However, these studies are single-country investigations and therefore cannot address the relative importance of the firm-specific incentives versus country-level factors that is the focus of our study.

A further reason to study private entities is that such firms are more likely to be constrained in obtaining external financing as a result of the low quality of the contracting environment in a country. Indeed, a major rationale for the WBES survey was to better understand how these financing constraints affect firms in order to better calibrate World Bank lending policies (Batra, Kaufmann, and Stone 2003). In contrast, publicly listed companies are more likely to have access to global capital markets and are better able to escape the constraints and limitations of a country's institutions and contracting environment. Thus, private entities provide a rich setting in which to study the relative importance of firm incentives and country factors in explaining voluntary governance choices such as private assurance services.

Our initial tests show that a private firm's voluntary use of assurance services is explained by firm-specific contracting incentives over and above the effects of country-level factors. However, the opposite is also true: country factors are significant over and above firm incentives. Thus both sets of factors are important in explaining voluntary use of assurance services. So, while the underlying institutions in a country are important in shaping the contract environment, firm-level contracting incentives are also important determinants of the governance structure of private entities and the decision to have voluntary assurance services.

The primary analysis examines the relative importance of firm incentives versus country factors in order to determine if voluntary use of assurance services is a complement to strong country-level institutions or a substitute for the lack of strong institutions. To evaluate this question we compare the relative importance of firm incentives and country factors for two groups of countries: low-GDP (per capita) countries and high-GDP (per capita) countries. We make this dichotomy to draw a sharp contrast in institutional differences between countries. Prior research shows that countries with greater economic development are more likely to have stronger institutions that protect investors and enable private contracting. In high-GDP countries, which proxy for those countries with stronger institutions, we find that firm incentives and country factors have equal explanatory power in explaining voluntary assurance services. In contrast, in low-GDP countries, which proxy for countries with weaker institutions, we find that firm incentives dominate country factors in explaining voluntary assurance services. This result does not support the "complement" view in Doidge et al. 2007 because firm incentives should be *less* important in countries with weaker institutions. Further analysis reveals that the low-GDP sample result is driven by the former socialist countries which are undergoing a restructuring of

their institutions. This result is consistent with Durnev and Kim 2005 who argue that firms have incentives to voluntarily improve their governance structures when a country's institutions are weak and do not adequately protect investor rights. Fan and Wong (2005) find a similar result with respect to audits of companies in East Asian countries. Finally, our results are robust to an alternative method of estimation and various samples.

Our study adds to the literature in several important ways. It contributes to understanding the private demand for assurance services by analyzing the joint role of firm-specific incentives and country-level institutional factors for a broad sample of countries. Importantly, a cross-country framework is essential to study the role of both firm incentives and country factors on the voluntary assurance decision. In contrast, most prior studies of the demand for audits are single-country settings and can consider only firm-level incentives. A notable exception is Kim et al. 2009 who examine the value of voluntary audits in reducing the cost of debt in Korea. They find that the value of Big 4 auditors in reducing the cost of debt is less important after the Asian financial crisis, implying that audit quality played a more important role for creditors in the pre-crisis period, characterized by a weaker institutional environment, relative to the post-crisis period with strengthened institutions. Their analysis of institutional change within a single country corroborates our results of a substitution effect between firm incentives and country factors.⁴

Our study also adds to the relatively limited literature on the financial reporting incentives of private firms. For example, Ball and Shivakumar (2005) study differences in earnings quality between public and private firms in the United Kingdom, and Katz (2009) investigates the earnings quality of U.S. firms that transition from private to public ownership. Both studies provide evidence that private firms do not have the same incentive to report high-quality earnings as do public firms. However, Francis, Khurana, Martin, and Pereira (2008), who use the same World Bank survey data that is used in this study, find that private firms with contracting-related incentives are more likely to voluntarily adopt International Accounting Standards (IAS), which suggests that some private firms are motivated to improve the quality of their financial reporting.⁵ Similarly, Allee and Yohn (2009) find that U.S. private firms which voluntarily improve the quality of their accounting reports through accrual-based accounting are rewarded with increased access to credit and a lower cost of debt.

The remainder of the paper is organized as follows. Section 2 develops the contrasting predictions about voluntary assurance services based on the arguments in Durnev and Kim 2005 and Doidge et al. 2007. Section 3 describes the WBES data and sample. Section

4. Kim et al. (2009) also find that the value of voluntary auditing increased during the post-crisis period, which they interpret as the consequence of a strengthened institutional infrastructure that reinforced the value of audits. However, their finding is also consistent with increased awareness of the importance of voluntary auditing following the financial crisis, regardless of the strengthened institutional infrastructure.

5. While our paper and Francis et al. (2008) complement each other, there are significant differences between the two studies. The use of external assurance service is a mechanism separate and distinct from the effects of IAS adoptions, even though both have the potential to improve the quality of accounting reports. The main difference is that an external assurance service such as an audit involves a third-party certification of financial statements, which can serve as a more credible (or higher-quality) signal than the adoption of IAS. Because an external audit constrains opportunistic behavior, it can impose higher costs on firms. Therefore, the determinants of the use of external assurance services as opposed to the use of IAS are likely to differ as firms trade off the costs and benefits in making such decisions. Indeed, the correlation between the adoption of IAS and the use of assurance services is only 0.35 in our sample, which confirms our conjecture that these are not equivalent choices. However, in section 6, as a sensitivity analysis to assure our results are not confounded by IAS adoptions, we exclude firms adopting IAS and these results are comparable to those reported in the tables.

4 presents the variables used in the study, and section 5 develops the research design and empirical models. Results are reported in section 6, and the paper concludes in section 7.

2. Development of the research question

Our research question builds on the work of Durnev and Kim 2005 and Doidge et al. 2007 which examines the payoffs from private investment in improved governance for listed firms and the *relative* importance of firm incentives versus country factors in explaining firms' governance structures in countries with differing levels of institutional development. We extend this line of research by examining the demand by private entities for improved governance through voluntary assurance services which can improve the credibility of accounting reports and thereby facilitate contracting with external parties.⁶

Durnev and Kim (2005) recognize the role of firm-specific incentives to adopt stricter governance structures that ameliorate conflicts of interest. They argue that the impact of firm-specific incentives is more important when the underlying institutional structures in a country are weak. Their point is that a firm's governance mechanisms can serve as a *substitute* for weak country-level institutions that inhibit the contracting process. However, in countries with stronger institutions and legal systems that protect investors, a firm has less to gain from the voluntary adoption of stricter governance because existing country-level institutions impose discipline on contracting parties and can provide sufficient protection for contracting parties.⁷ The empirical prediction that emerges under this view is that a voluntary assurance service such as an audit is relatively more important in countries with weak contracting environments because private mechanisms such as auditing serve as a substitute for the inherent weaknesses in underlying institutions that constrain the contracting process. The evidence in Durnev and Kim 2005 is consistent with their argument as they find a stronger relation between the quality of governance and disclosure practices of listed companies and firm value in weaker institutional environments.

An alternative view is presented in Doidge et al. 2007 who develop a model of how country-level factors affect the costs and benefits of better governance. In countries with weak institutions, they argue that the payoffs of improved governance structures are inherently lower because they lack credibility. In addition, because capital markets are less developed in such countries, even if improved governance structures are credible, they will not necessarily improve a firm's access to external financing. The implication is that the inherent weakness of a country's institutions, combined with limited external financing prospects, limits the firm's incentives to adopt better governance structures such as voluntary use of assurance services.⁸ However, in countries with stronger institutions, when a

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6. Durnev and Kim (2005) test for cross-firm and cross-country differences in corporate governance practices of listed firms with data from Credit Lyonnais Securities Asia (CLSA) as reported in Gill 2001 and use S&P's disclosure ratings as a robustness check. Doidge et al. (2007) also test multiple governance metrics for listed firms including the CLSA corporate governance ratings, the S&P transparency and disclosure ratings, and the FTSE ISS corporate governance index.
 7. Kim et al. (2009) examine the relation between voluntary audit and cost of borrowing for private Korean firms that are not subject to mandatory audit requirement. They find that a voluntary audit is associated with a 60-basis-point reduction in interest rate compared to a 25-basis-point reduction for U.S. private firms documented in Blackwell et al. 1998. They attribute this effect to the role of auditing in reducing information asymmetry rather than insurance because during their sample period Korea had weak investor and credit protection laws, which prohibited investors/creditors from suing auditors.
 8. In related research, Fan and Wong (2005) examine the audit function in countries in East Asia and elaborate on why the payoffs to adopting independent audits may not be significant in these countries due to weak institutions and governance structures. First, the institutional environment supports an opaque business environment which limits the effectiveness of the audit function. Second, the lack of audit expertise in these countries weakens the independent auditor's monitoring role. Third, an external audit loses its value when the auditor's adverse opinion does not have significant consequences because of weak enforcement.

threshold level of institutional development is reached the cost–benefit payoff structure changes. Once this threshold occurs, a firm’s voluntary adoption of better governance is more likely to be viewed as credible and thus is more likely to enable contracting with external parties. In addition, because capital markets are more developed in these countries, improved governance structures are also more likely to result in access to external financing. The empirical prediction under this view is that voluntary auditing is more likely to occur in countries with stronger contracting environments because the net payoffs from better governance structures are more likely to be positive. Consistent with this argument, Doidge et al. (2007) find that firm incentives are more important in developed economies with institutions that support private contracting than in less-developed countries with weaker institutions.

To sum up, the substitution argument in Durnev and Kim 2005 implies that firm incentives will be relatively more important in weak countries than in strong countries, while the “complement” view of Doidge et al. 2007 implies that firm incentives will be relatively less important in weak countries than in strong countries. The purpose of our study is to see which of these two predictions better explains the demand for voluntary assurance services by private entities.⁹

3. Sample

The sample utilizes data from the WBES conducted in 1999–2000 (World Bank 2002). We begin with the full sample of 10,032 observations from 80 countries in the WBES database, and then eliminate 495 publicly listed companies and 4,795 private entities with missing data on firm-level variables. This results in a preliminary sample of 4,742 private entities. Lastly we eliminate 913 limited liability corporations in 39 countries that have statutory audit requirements for such entities, but retain other private entities in these countries such as partnerships, sole proprietorships, and cooperatives.¹⁰ The basis for this final screen comes from information on audit requirements in Buijink, Maijoor, Meuwissne, and Witteloostuijn 1996, World Bank 2005, and International Federation of Accountants 2005. The final sample consists of 3,829 private entities from 62 countries.

The World Bank survey was conducted to identify country-level constraints on enterprise growth for a large cross-regional set of countries in order to improve the Bank’s lending practices (World Bank 2002). Data were collected primarily through face-to-face interviews at the managerial level in enterprises, though Batra et al. (2003) note that Japan was not surveyed because of the expense, and mail surveys were predominately used in

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9. A demand-side perspective is explicitly adopted in the study, although what is observed empirically is the equilibrium driven by both supply and demand. For example, there is theoretical work that audit quality improves with stronger investor protection regimes (Newman, Patterson, and Smith 2005). Consistent with this conjecture, we observe more brand-name Big 4 audits in countries with stronger investor protection (Choi and Wong 2007), and there is evidence that Big 4 audits result in higher earnings quality in countries with stronger investor protection but not in countries with weaker investor protection (Francis and Wang 2008). In related research, Hope, Kang, and Thomas (2009) find that lower-quality audits increase a firm’s cost of capital in countries with strong investor protection, which is consistent with the more prominent role of audited financial statements in these countries. Supply-side characteristics are controlled by the country-level variables in the study; however, it is possible that other supply-side effects exist and affect assurance rates.
10. The 39 countries are Albania, Argentina, Bangladesh, Belarus, Bolivia, Brazil, Bulgaria, Cambodia, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, El Salvador, France, Germany, Honduras, Hungary, India, Indonesia, Italy, Malaysia, Mexico, Moldova, Nicaragua, Pakistan, Philippines, Portugal, Russia, Singapore, Slovakia, Spain, Sweden, Trinidad and Tobago, Turkey, United Kingdom, Uzbekistan, and West Bank-Gaza. In four of these countries (Belarus, Cambodia, Costa Rica, and El Salvador) we were unable to determine if audits were required for private companies, and we eliminated private companies from these four countries to be conservative in the sample selection process to assure the sample firms have voluntary rather than government-mandated audits.

Africa. The survey has a number of general questions regarding the effect on business operations of taxation, regulation, corruption, and the country's financial sector and institutional/legal environment. These questions are used to develop control variables in the empirical models.

A stratified random sampling methodology was used for each country to draw a sample from a well-defined universe of firms (Batra et al. 2003). A sample frame was developed for sample countries to reflect the distribution of firms by industry sector, size (measured by number of employees), and location. More specifically, WBES specified a number of targets in terms of the representation of industries, size, ownership characteristics, and export status of firms for the surveys across all regions. The sectoral composition of firms was allocated in accordance with share of GDP.¹¹ Ayyagari, Demirgüç-Kunt, and Maksimovic (2008) note that, because of confidentiality agreements between the World Bank and the surveyed firms, it is not possible to validate the financial information provided by the firms or to supplement it with publicly available data.¹²

An important aspect of the World Bank survey is that a large number of countries are included that have been previously excluded in prior research due to the lack of information on country-level institutions. For example, 36 out of the 62 countries in our sample (and over half of the observations) are *not* among the set of 49 countries in La Porta et al. 1998, which is widely used in cross-country research. The omitted countries in these prior studies include former Eastern bloc countries like Russia, Hungary, and Poland; important developing economies like China; and smaller less-developed economies such as Bolivia and Bangladesh. In contrast, what we currently know from cross-country accounting research comes mainly from larger publicly listed corporations in a relatively small number of economically developed countries.

Another unique feature of the WBES sample is that it includes 23 transitional socialist countries. Ayyagari et al. (2008) note that transitional economies are different from other countries used in prior studies in that they have a historical socialist legal tradition and are undergoing transition shocks due to significant restructuring of their institutions. These countries are copying Western-style institutions, but concerns remain over the quality of these newly reformed institutions. The International Monetary Fund (2000) notes that the transformation of socialist countries from centrally planned economies into market

11. The survey was structured to obtain responses from at least 100 firms in each country. However, the actual number of observations in our sample departs from the total number of firms surveyed because some of the respondents did not provide specific information on variables that are germane to our study such as the use of an audit. Moreover, there are a disproportionately large number of firms in the WBES sample from countries such as Thailand. Batra et al. (2003) note that the World Bank oversampled when firms having desired characteristics (such as foreign ownership) were rare in the general population. Therefore, it is not surprising that the WBES sample differs from the sampling targets described above. We also recognize that accounting numbers used to derive firm-specific variables are based on financial data prepared under different sets of accounting principles. Therefore the interpretation of our results is subject to caveats with respect to sample composition and the accounting principles used by sample firms.

12. The WBES data have been widely used in recent research. For example, Beck, Demirgüç-Kunt, and Maksimovic (2005) examine the effects of financial, legal, and corruption problems on firm growth rates; Beck, Demirgüç-Kunt, and Levine (2005) investigate how legal system traits (judicial independence from the government and the ability of courts to adapt to changing conditions) influence obstacles that firms face in raising capital; and Beck, Demirgüç-Kunt, and Levine (2006) study the impact of bank supervisory policies on firm financing obstacles. Ayyagari et al. (2008) use the WBES data to investigate different institutional theories to explain firms' perception of property rights. Francis et al. (2008) examine the role of country and firm factors in explaining the use of IAS. Other studies using the WBES data include Love and Mylenko 2003, who investigate whether the presence of a credit registry in a country is associated with lower financing constraints, and Djankov, McLiesh, and Shleifer 2007, who examine cross-country determinants of private credit.

economies entails a long transition process. This process includes liberalization, restructuring, and privatization, along with legal and institutional reforms. While all these processes must ideally occur at the same time, Havrylyshyn and Wolf (1999) find that the institutional development of most transitional economies lags behind their economic growth. The implication is that individual firms in transitional economies may take private actions such as having voluntary assurance services to mitigate the contracting constraints created by weak institutions in order to achieve growth objectives. The situation in these transitional economies bears a close resemblance to the general argument in Durnev and Kim 2005 that firms have greater private incentives to improve their governance structures when country-level institutions are especially weak and inhibit contracting.

4. Firm-specific and country-level variables

We test a set of firm-specific incentives and set of country factors for their association with the voluntary use of assurance services. These variables are defined in this section. Note that the choice of variables, especially the firm-specific variables, is motivated by the extant literature; however, we are limited by the nature of the WBES survey and data.

Firm-specific incentives

Audited financial statements are more credible and therefore can reduce the information asymmetry between the firm and outsiders which impedes the contracting process. Consistent with this, Leftwich (1983) finds that private companies in the United States are often asked by banks to provide audited financial statements as a condition for financing, even though such firms are not legally required to have an audit. Thus, a firm may have an audit/review in anticipation of a bank loan application to increase the likelihood of obtaining a loan, and subsequent audits/reviews may be required for the ex post monitoring of contracts.¹³

Six variables in the WBES database are used to measure the firm's contracting incentives for assurance services in order to reduce information asymmetries with outside parties: (1) expected growth opportunities, (2) current external financing, (3) foreign owners, (4) export sales, (5) corporate ownership structure, and (6) size of the firm. We predict that firms are more likely to have a voluntary assurance service in order to reduce information asymmetry if they have positive future growth opportunities, greater levels of current external financing, foreign ownership, export sales, a limited liability corporate ownership structure, and are larger in size.

Future growth opportunities are based on the firm's expected investment growth (*INVGR*) and are measured as expected growth in investment over the next three years. In addition, Blackwell et al. (1998), Allee and Yohn (2009), and Kim et al. (2009) show that private firms derive an economic benefit from auditing through a significantly lower interest rate than that paid by non-audited firms. In other words, firms that are more dependent on external financing are more likely to commit to assurance services to reduce their cost of capital. We measure a firm's external financing dependence (*EXTDEP*) as the portion of the firm's current financing that comes from external sources (equity and bank loans) rather than internally generated funds. We expect the coefficients on *INVGR* and *EXTDEP* to be positively related to having assurance services, either to secure current financing or in anticipation of future financing activities.

13. If contracting parties such as banks require an audit, this actually underscores our basic argument that audits are important in facilitating the contracting process, although it turns out that audits are not universally required in order to secure external financing. For example, the Pearson correlation in our sample between the variable "audit" and the variable "external financing" is only +0.17.

Firms face additional information asymmetry problems if they have foreign owners who find it more costly to be knowledgeable about a firm than local owners. Leuz, Lins, and Warnock (2009) show that foreign investment is lower in firms that manage earnings, and audits/reviews are one way to make accounting reports more credible to potential foreign investors. We include an indicator variable *FOWN* coded one if the nationality of any owners of a firm is different than the place of domicile of the firm, and zero otherwise. The coefficient on *FOWN* is expected to be positively associated with voluntary assurance services.

The adoption of governance practices can also be affected by a firm's export activity. Khanna, Palepu, and Srinivasan (2004) argue that higher levels of product market interactions can lead to better accounting disclosures. As an example, they note that "foreign customers may need financial information to assess the long-term viability of the suppliers" (480). To the extent that externally reviewed financial statements by auditors are more credible, they may facilitate contracting with foreign customers. Therefore, we include an indicator variable in the model to capture whether a firm has export sales. Specifically, *EXP* takes the value of one if a firm is an exporting firm, and zero otherwise. The coefficient on *EXP* is expected to be positively associated with voluntary assurance services.

Firms are also likely to have greater information asymmetry and agency problems if they are organized as a limited liability corporation with multiple owners compared to more closely held ownership structures. We include an indicator variable to control for organizational form. Specifically, *OWNERSHIP* takes the value of one if the firm is organized as a limited liability corporation and zero if a firm is organized as a partnership, proprietorship, or cooperative. The coefficient on *OWNERSHIP* is expected to be positively associated with voluntary assurance services.

We also consider the general effect of firm size on the private demand for assurance services. Chow (1982) cites several reasons why the demand for auditing should increase with the size of the firm. Firm size is directly related to the complexity of the firm. Larger firms have more complex operating, financing, and investing activities and therefore have a greater need for an external audit/review to facilitate monitoring by both internal and external parties. Several studies (e.g., Chow 1982; Abdel-khalik 1993; Hay and Davis 2004) find a positive association between firm size and the voluntary demand for auditing. We follow Ayyagari et al. 2008 and measure firm size based on the number of employees in the firm. Ayyagari et al. note that employment is typically the most reliable measure of firm size in developing countries. Hence, the number of full-time workers is a commonly used measure of firm size by the World Bank and other international survey teams including Regional Program on Enterprise Development (RPED) and the Oxford Centre for the Study of African Economies. The variable *SIZE* takes on the value of one if a firm employs fewer than 50 employees, two if it employs 51 to 500 employees, and three if it has more than 500 employees.¹⁴

In sum, the firm-level variables capture explicit contracting incentives for assurance services, for example, the firm's reliance on external financing and export activities. Other firm-level variables capture the degree of information asymmetry due to the firm's size and ownership structure and other operating characteristics which create a demand for external assurance services in order to provide credible information to outside parties.

Country-level variables

The purpose of the set of country-level variables is to capture fundamental elements of a country's institutions that enhance (or constrain) the quality of the private contracting

14. The WBES survey requested firms to report sales. However, the sales variable has a large number of missing values. Moreover, the WBES survey data do not specify the currency denomination used for the sales variable.

environment. To accomplish this, we examine five country-level institutional variables in addition to the country's GDP per capita and level of financial market development (FD). The log of GDP per capita (*LGDP*) measures the overall economic development and wealth of a country and is included because of its general effect on the quality of investor protection and the contracting environment (La Porta et al. 1998). Simply put, wealthier countries have more resources to develop their legal systems and enforcement practices, and more economically developed countries also have other institutional development that protect property rights and facilitate private contracting (Claessens and Laeven 2003). We also use a country-level variable to control for the level of a country's financial development (*FD*). The rationale for this variable is that countries have more developed financial markets because of stronger underlying institutions in place that enable private contracting. More financially developed markets also create greater demand for assurance services to address agency conflicts between external financiers and firms.

The country-level institutional variables used most widely in the literature are those originally developed by La Porta et al. 1998. Unfortunately, only 26 of the 62 countries in our sample are included in the set of 49 countries in La Porta et al. In addition, many of the variables developed by La Porta et al. are based on private information, so it is not possible to create these variables for the new countries in our sample. However, there is one variable in La Porta et al. that can be used because it is based on public information, and that is a country's legal tradition. We initially code legal tradition (*LAW*) as one for common law countries, and zero for all others. In some of the analyses we also analyze separately those countries with common law, code law, and socialist legal traditions. The evidence in La Porta et al. 1998 indicates that investors generally have better protection in common law countries and that more financial contracting occurs in such countries. The remaining four country-level variables are derived from the WBES survey data based on questions about a country's institutional environment. The measurement of these variables is based on mean values of all WBES survey respondents per country (not just the observations in our sample) and capture different aspects of a country's institutional environment. *ENFORCE* is a measure of enforcement with higher values reflecting perceptions of stronger enforcement of court decisions. The other variables measure general financing constraints (*GFC*) faced by firms, corruption (*GCORR*), and the constraints of the judiciary system (*JUDC*), with higher values reflecting perceptions of greater financing constraints, corruption, and judiciary constraints. Countries will have a stronger private contracting environment if its court decisions are enforced, if there are fewer constraints on financing activities, if corruption is low, and if the judiciary is effective in enforcing laws (including contract law).¹⁵

No directional signs are predicted for the country-level variables because of the competing arguments relating to the demand for assurance services. Specifically, assurance

15. As a sensitivity analysis we also test two additional country-level variables that measure the quality of the legal environment for a subset of 52 countries in our sample. Results including these two additional variables are qualitatively the same as the full sample results. The first variable measures a country's "legal structure" and is the arithmetic mean of two components, one measuring the degree to which the judiciary is independent and not subject to interference by the government or parties in disputes, and the other measuring the extent to which a trusted legal framework exists for private businesses to challenge the legality of government actions or regulation. Each component is measured from 0 ("no economic freedom") to 10 ("full economic freedom") and is reported in *Economic Freedom of the World* (Gwartney and Lawson 2002). The second variable measures the "security of property rights" in a country and is computed as the arithmetic mean of three components, one measuring the degree of protection of intellectual property, a second measuring the degree of military interference in rule of law and the political process, and the third measuring the integrity of the legal system. Each component is measured from 0 ("no economic freedom") to 10 ("full economic freedom") and is reported in *Economic Freedom of the World* (Gwartney and Lawson 2002).

services could be in greater demand in countries with weaker contracting environments due to a substitution effect (Durnev and Kim 2005). Alternatively, assurance services could be in greater demand in institutionally stronger countries where the net payoff from a better governance structure is more likely to be positive due to a complementary effect (Doidge et al. 2007).

Descriptive statistics for firm variables and country variables

Table 1 reports mean values for each country grouped by legal origin (common law, code law, socialist) for *AUDIT*, where *AUDIT* captures whether a firm's financial reports are reviewed by an external auditor, *GDP* per capita, financial development (*FD*), and other country-level variables which measure a country's legal and institutional environment (*ENFORCE*, *GFC*, *GCORR*, *JUDC*). The number of individual firms covered within a country ranges from a low of six in France to a high of 228 in Thailand.¹⁶ There is substantial variation in audit rates across countries both within and across legal origins. For example, Azerbaijan has the lowest rate of assurance service (9 percent for a sample of 79 firms) and Sweden and France the highest rate of assurance service (100 percent for samples of 12 and 6 firms, respectively). Transitional socialist countries have the lowest overall assurance service rate (37 percent) and code law countries have the highest assurance service rate (69 percent) with common law countries in between (59 percent). The rate of having assurance service between common law and code law countries is not statistically significant. However, this rate is significantly different at the .01 level between common law and socialist countries and between code law and socialist countries.

Socialist countries as a group also have relatively low *GDP* per capita relative to code law and common law countries. *FD* is greatest for common law countries, followed by code law and transitional socialist countries. Moreover, socialist economies exhibit values of enforcement (*ENFORCE*), general financing constraint (*GFC*), general corruption (*GCORR*), and judiciary constraint (*JUDC*) that generally reflect weaker institutions relative to common and code law countries, which underscores the inherent weakness in investor protection in socialist countries.

Table 2 reports country-level means of the firm-level variables for each of the 62 sample countries classified by legal origin. There is substantial variation across countries. Moreover, firms in socialist countries as a group have the lowest use of external financing, lowest foreign ownership, are smaller in size relative to firms in common and code law countries, but higher growth opportunities than code law countries, all of which points to firms in socialist countries facing contracting constraints due to a weaker institutional environment and highlights the potential for assurance services to mitigate these constraints.

Table 3, panel A presents firm-level descriptive statistics for the 3,829 observations in the study. For the entire sample, 55 percent of observations have external assurance

16. Two countries have particularly large samples relative to the other countries in the study. Cambodia has 207 observations and Thailand has 228 observations. There are only three other countries with more than 100 observations. To assure the results are not driven by Cambodia and Thailand, we delete each country one at a time and repeat all multivariate tests. We also randomly select 30 percent of firms from Cambodia and Thailand (65 firms from Cambodia and 67 firms from Thailand) and combine these observations with all firms from other countries to form a test sample and repeat all multivariate tests. Our inferences using these approaches remained unaltered. It is also possible that the variance differs systematically by country due to differences in sample size, which could potentially bias the estimations. Therefore, as an additional sensitivity test, we reestimated our models using weighted least squares to account for potential cross-country heteroskedasticity in the sample. Each country is weighted equally so that observations receive more (less) weight in countries with fewer (more) observations. The general tenor of our results using weighted least squares estimation is similar to those reported in the paper. Details of the above tests are available from the authors.

TABLE 1
Audit rates and country variables for sample of 62 countries

Country Name	N	AUDIT	GDP	FD	ENFORCE	GFC	GCORR	JUDC
<i>Common Law legal origin:</i>								
Bangladesh	18	0.89	337	-2.8	2.95	2.4	3.11	2.31
Belize	28	0.61	2893	0.03	3.04	2.61	1.93	1.41
Canada	49	0.63	20731	3.79	3.48	2.43	1.4	1.47
India	19	0.84	416	0.96	3	2.65	2.8	1.83
Malaysia	18	0.22	4539	11.59	3.11	2.68	2.03	1.51
Pakistan	30	0.27	502	0.41	2.32	3.32	3.49	2.64
Singapore	7	0.86	25136	8.28	4.33	1.98	1.38	1.32
Thailand	228	0.82	2836	4.08	2.56	3.16	3.42	2.14
Trinidad& Tobago	40	0.38	4558	-1.5	2.71	3.1	1.77	1.48
United Kingdom	31	0.48	20576	6.46	2.62	2.4	1.38	1.64
United States	43	0.58	29273	11.99	2.55	2.23	1.78	1.8
West Bank-Gaza	14	0.50	1499	-2.3	2.16	2.43	2.77	2.27
<i>Mean</i>	<i>44</i>	<i>0.59</i>	<i>9441</i>	<i>3.42</i>	<i>2.90</i>	<i>2.62</i>	<i>2.27</i>	<i>1.82</i>
<i>Code Law legal origin:</i>								
Argentina	18	0.50	7990	-2.6	2.08	3.02	2.6	2.34
Bolivia	78	0.79	940	-2.49	1.53	3.05	3.55	2.72
Brazil	39	0.72	4489	-0.81	2.53	2.7	2.48	2.52
Chile	83	0.84	5003	0.28	3.27	2.4	1.86	1.99
Colombia	73	0.88	2383	-2.84	1.95	2.62	2.77	2.36
Costa Rica	56	0.84	3581	-1.78	2.43	2.58	2.53	2.16
Dominican Republic	95	0.89	1741	-1.67	2.2	2.64	2.94	2.48
Ecuador	57	0.56	1715	-3.46	1.54	3.25	3.54	3.04
El Salvador	85	0.93	1707	-4.51	1.75	2.85	3.05	2.66
France	6	1.00	27774	2.05	3.48	2.63	1.62	1.64
Germany	29	0.10	30788	3.23	1.95	2.54	1.86	2.06
Guatemala	76	0.58	1504	-3.96	1.61	2.96	2.63	2.47
Haiti	59	0.34	369	-0.97	1.29	3.41	3.13	2.17
Honduras	38	0.71	712	-1.23	1.74	2.89	2.77	2.26
Indonesia	40	0.43	1055	-0.22	1.52	2.86	2.71	2.22
Italy	64	0.67	19698	0.56	2.11	2.14	1.81	2.13
Mexico	76	0.80	3395	-1.84	1.68	3.19	3.33	2.84
Nicaragua	57	0.70	427	0.13	1.78	3.05	2.87	2.33
Panama	72	0.92	3579	-1.12	2.4	2.11	2.9	2.51
Peru	81	0.75	2302	-2.49	1.7	3.06	2.82	2.5
Philippines	17	0.53	1123	0.96	2.22	2.73	3.16	2.34
Portugal	31	0.65	11639	0.98	2.47	1.78	1.82	1.78
Spain	78	0.71	15779	5.2	2.92	2.22	2.15	2.02
Sweden	12	1.00	28388	5.2	2.4	1.97	1.19	1.55
Turkey	59	0.34	2927	1.46	2.66	3.15	2.88	2.29

(The table is continued on the next page.)

TABLE 1 (Continued)

Country Name	N	AUDIT	GDP	FD	ENFORCE	GFC	GCORR	JUDC
Uruguay	66	0.58	6440	-3.26	3.28	2.74	2.12	1.92
Venezuela	81	0.94	3483	-3.6	1.82	2.61	3.03	2.71
Mean	57	0.69	7072	-0.70	2.16	2.71	2.60	2.30
<i>Socialist legal origin (23 countries):</i>								
Albania	72	0.54	832	-0.78	1.43	2.85	3.25	2.62
Armenia	79	0.15	992	-2.63	2.22	2.58	1.92	1.46
Azerbaijan	43	0.09	341	-2.7	2.22	2.82	2.74	2.39
Belarus	44	0.27	1187	-1.41	2.52	3.29	1.84	1.51
Bosnia	79	0.58	1166	-0.19	1.84	3.22	2.57	2.47
Bulgaria	72	0.36	1439	-3.52	3.59	3.12	2.59	2.18
Cambodia	207	0.22	283	-1.67	2.26	2.03	NA	1.99
China	49	0.45	677	4.92	2.94	3.34	2.04	1.54
Croatia	52	0.81	4630	-2.96	2.22	3.41	2.58	2.65
Czech Rep	47	0.17	5187	-0.01	2.27	3.18	2.13	2.13
Estonia	114	0.37	3818	-0.23	2.9	2.53	1.85	1.7
Georgia	81	0.43	422	-1.72	2.11	3.19	3.04	1.97
Hungary	23	0.78	4703	-0.94	2.56	2.66	1.92	1.3
Kazakhstan	59	0.25	1284	-4.38	1.78	3.2	2.49	1.91
Lithuania	53	0.11	2056	-3.64	2.57	2.8	2.54	2.13
Moldova	27	0.37	668	-2.59	1.93	3.41	2.92	2.5
Poland	171	0.55	3216	-2.18	2.19	2.42	2.22	2.21
Romania	78	0.23	1530	-3.58	2.74	3.29	2.82	2.59
Russia	118	0.33	2222	-3.47	1.67	3.2	2.64	2.21
Slovakia	56	0.21	3925	-0.23	2.89	3.34	2.39	2.1
Slovenia	90	0.66	10233	-1.25	3.39	2.31	1.61	2.25
Ukraine	89	0.31	867	-4.22	1.94	3.41	2.49	2.05
Uzbekistan	75	0.35	462	-2.3	3.56	2.74	2.39	1.71
Mean	77	0.37	2267	-1.81	2.42	2.97	2.41	2.07
Common vs. Code		-0.10	2370	4.11***	0.74***	-0.09	-0.33	-0.48***
Common vs. Socialist		0.22**	7174**	5.23***	0.48**	-0.36**	-0.14	-0.25*
Code vs. Socialist		0.32***	4805**	1.12	-0.26	-0.26**	0.19	0.23*

Notes:

All variables are as defined in the appendix.

*, **, and *** Significant at 10%, 5%, and 1% level, respectively.

services. The expected three-year investment growth rate (*INVGR*) averages 35 percent, and the firm’s current financing (*EXTDEP*) averages 21 percent from external equity and bank loans. Thirty-four percent of sample firms are exporters (*EXP*) and 16 percent have one or more foreign owners (*FOWN*). The median firm in our sample has 51 to 500 employees. Approximately 44 percent of observations are small firms (firms with fewer than 50 employees), another 39 percent are medium-sized firms (firms that employ 51 to 500 employees), and the remaining 17 percent are large firms (over 500 employees). The sample has 13 percent of entities organized as limited liability corporations and the remaining 87 percent are partnerships, sole proprietorships, or cooperatives.

Panel B of Table 3 reports Pearson correlations among the firm-level variables. All firm-specific variables are significantly associated with *AUDIT* in the expected direction.

TABLE 2
Firm level variables for sample of 62 countries

Country Name	N	<i>INVGR</i>	<i>EXTDEP</i>	<i>FOWN</i>	<i>EXP</i>	<i>OWNERSHIP</i>	<i>SIZE</i>
<i>Common Law legal origin:</i>							
Bangladesh	18	0.25	29.17	0.28	0.61	0.00	2.17
Belize	28	0.20	44.89	0.25	0.29	0.18	1.50
Canada	49	0.10	29.69	0.10	0.43	0.59	1.84
India	19	0.18	20.89	0.21	0.63	0.00	2.00
Malaysia	18	-0.01	11.67	0.06	0.17	0.00	1.33
Pakistan	30	0.10	23.67	0.07	0.43	0.00	1.57
Singapore	7	0.20	23.57	0.14	0.14	0.00	1.57
Thailand	228	2.16	36.13	0.33	0.43	0.71	1.60
Trinidad& Tobago	40	0.11	52.25	0.15	0.25	0.00	1.45
United Kingdom	31	0.16	24.03	0.06	0.26	0.00	1.35
United States	43	0.16	19.63	0.07	0.26	0.58	1.74
West Bank-Gaza	14	-0.10	21.57	0.07	0.57	0.00	1.43
<i>Mean</i>	<i>44</i>	<i>0.29</i>	<i>28.10</i>	<i>0.15</i>	<i>0.37</i>	<i>0.17</i>	<i>1.63</i>
<i>Code Law legal origin:</i>							
Argentina	18	0.04	25.11	0.11	0.33	0.00	1.67
Bolivia	78	0.17	26.42	0.27	0.37	0.00	1.99
Brazil	39	0.09	29.74	0.31	0.36	0.00	2.13
Chile	83	0.14	35.10	0.36	0.47	0.00	1.99
Colombia	73	0.14	26.86	0.34	0.41	0.00	2.51
Costa Rica	56	0.29	26.46	0.20	0.33	0.34	2.23
Dominican Republic	95	0.05	20.84	0.14	0.23	0.37	2.00
Ecuador	57	0.08	30.40	0.19	0.29	0.00	1.91
El Salvador	85	-0.08	4.17	0.00	0.50	0.00	1.67
France	6	0.05	37.62	0.21	0.34	0.00	1.72
Germany	29	0.16	23.30	0.20	0.33	0.32	1.84
Guatemala	76	0.16	11.92	0.17	0.17	0.10	1.63
Haiti	59	0.09	22.89	0.21	0.32	0.00	1.79
Honduras	38	0.02	13.13	0.18	0.28	0.00	1.80
Indonesia	40	0.14	27.69	0.25	0.31	0.00	1.97
Italy	64	0.32	26.09	0.02	0.28	0.51	1.11
Mexico	76	0.17	13.57	0.17	0.43	0.00	2.07
Nicaragua	57	0.20	20.09	0.19	0.19	0.00	1.67
Panama	72	0.21	46.15	0.17	0.47	0.10	2.29
Peru	81	0.09	25.90	0.28	0.23	0.12	2.04
Philippines	17	0.09	15.59	0.12	0.24	0.00	1.59
Portugal	31	0.19	10.29	0.03	0.13	0.00	1.52
Spain	78	0.21	17.73	0.22	0.45	0.00	1.85
Sweden	12	-0.02	1.00	0.08	0.25	0.00	2.42
Turkey	59	0.10	28.88	0.05	0.36	0.00	1.68

(The table is continued on the next page.)

TABLE 2 (Continued)

Country Name	N	<i>INVGR</i>	<i>EXTDEP</i>	<i>FOWN</i>	<i>EXP</i>	<i>OWNERSHIP</i>	<i>SIZE</i>
Uruguay	66	0.16	35.56	0.18	0.52	0.02	2.05
Venezuela	81	0.06	17.65	0.23	0.37	0.15	2.02
<i>Mean</i>	57	0.12	22.97	0.18	0.33	0.07	1.89
<i>Socialist legal origin (23 countries):</i>							
Albania	72	0.23	2.90	0.14	0.24	0.00	1.44
Armenia	79	-0.13	3.61	0.03	0.08	0.41	1.33
Azerbaijan	43	-0.13	3.02	0.00	0.07	0.02	1.33
Belarus	44	0.00	5.32	0.05	0.27	0.00	1.70
Bosnia	79	0.55	19.59	0.14	0.53	0.13	1.61
Bulgaria	72	0.34	8.33	0.11	0.35	0.00	1.60
Cambodia	207	0.31	9.14	0.20	0.18	0.00	1.30
China	49	0.18	14.76	0.37	0.31	0.00	1.84
Croatia	52	0.26	14.77	0.32	0.43	0.00	2.16
Czech Rep	47	0.18	19.42	0.10	0.56	0.00	1.77
Estonia	114	0.08	10.21	0.06	0.32	0.00	1.32
Georgia	81	0.43	35.03	0.19	0.58	0.32	1.68
Hungary	23	0.10	8.21	0.14	0.25	0.07	1.54
Kazakhstan	59	0.34	26.09	0.04	0.48	0.00	2.04
Lithuania	53	0.25	11.10	0.03	0.17	0.10	1.56
Moldova	27	-0.14	3.70	0.07	0.33	0.00	1.67
Poland	171	0.36	44.92	0.09	0.49	0.01	1.66
Romania	78	0.23	13.53	0.15	0.18	0.10	1.45
Russia	118	0.24	8.58	0.02	0.08	0.00	1.58
Slovakia	56	0.13	4.39	0.00	0.36	0.00	1.43
Slovenia	90	0.35	21.03	0.13	0.79	0.27	1.78
Ukraine	89	0.11	6.80	0.04	0.20	0.40	1.43
Uzbekistan	75	0.46	7.13	0.09	0.12	0.00	1.71
<i>Mean</i>	77	0.21	13.11	0.11	0.32	0.08	1.61
Common vs. Code		0.17***	5.13***	-0.03	0.04*	0.10***	-0.26***
Common vs. Socialist		0.09***	14.98***	0.04***	0.05***	0.09***	0.02
Code vs. Socialist		-0.08***	9.86***	0.07***	0.01	-0.01	0.29***

Notes:

All variables are defined in the appendix.

*, **, and *** Significant at 10%, 5%, and 1% level, respectively.

Firms have more audits/reviews if they have larger expected growth rates (*INVGR*), larger current external financing (*EXTDEP*), foreign owners (*FOWN*), export sales (*EXP*), a corporate ownership structure (*OWNERSHIP*), and are larger firms (*SIZE*). These simple correlations offer preliminary evidence that firm-specific contracting incentives are related to the voluntary use of audits/reviews. Correlations among the firm-specific variables are relatively small, with the largest being +0.26 between *SIZE* and *OWNERSHIP*.

Panel C of Table 3 reports Pearson correlations among country-level variables for the 62 countries in the sample.¹⁷ Country wealth per capita (*LGDP*) is significantly correlated with all of the other country-level variables (except *LAW*) and is consistent with evidence

17. Data for the general corruption variable (*GCORR*) are not available for firms from Cambodia. For our regression analysis, we assigned the mean value of *GCORR* to Cambodian firms based on the remaining 61 sample countries. Repeating the analyses by omitting firms from Cambodia yields results similar to those reported in the paper.

TABLE 3
Summary statistics and correlations

Panel A: Firm-level descriptive statistics (n = 3829)^a

Variable	Mean	Stdev.	Quartile1	Median	Quartile3
<i>AUDIT</i>	0.55	0.50	0.00	1.00	1.00
<i>INVGR</i>	0.35	1.12	0.10	0.20	0.40
<i>EXTDEP</i>	0.21	0.30	0.00	0.07	0.40
<i>FOWN</i>	0.16	0.37	0.00	0.00	0.00
<i>EXP</i>	0.34	0.47	0.00	0.00	1.00
<i>OWNERSHIP</i>	0.13	0.34	0.00	0.00	0.00
<i>SIZE</i>	1.72	0.73	1.00	2.00	2.00
<i>LGDP</i>	4112	5492	992	2301	3818
<i>FD</i>	-0.86	3.02	-2.83	-1.67	-0.01
<i>LAW</i>	0.14	0.34	0.00	0.00	0.00
<i>ENFORCE</i>	2.34	0.59	1.75	2.21	2.77
<i>GFC</i>	2.82	0.42	2.47	2.92	3.17
<i>GCORR</i>	2.57	0.58	2.03	2.67	2.95
<i>JUDC</i>	2.21	0.38	2.00	2.22	2.78

Panel B: Pearson correlations among firm-level variables (n = 3829)

Variable	<i>AUDIT</i>	<i>INVGR</i>	<i>EXTDEP</i>	<i>FOWN</i>	<i>EXP</i>	<i>OWNERSHIP</i>
<i>INVGR</i>	0.05***					
<i>EXTDEP</i>	0.17***	0.02				
<i>FOWN</i>	0.24***	0.06***	0.11***			
<i>EXP</i>	0.20***	-0.00	0.15***	0.22***		
<i>OWNERSHIP</i>	0.09***	0.15***	0.10***	0.091***	0.09***	
<i>SIZE</i>	0.36***	-0.04**	0.17***	0.26***	0.29***	0.04**

Panel C: Pearson correlations among country-level variables (n = 62)

Variable	<i>LGDP</i>	<i>FD</i>	<i>LAW</i>	<i>ENFORCE</i>	<i>GFC</i>	<i>GCORR</i>
<i>FD</i>	0.52****					
<i>LAW</i>	0.14	0.51***				
<i>ENFORCE</i>	0.39***	0.40***	0.37***			
<i>GFC</i>	-0.52***	-0.44***	-0.22***	-0.36***		
<i>GCORR</i>	0.70***	-0.51***	-0.18***	-0.59***	0.59***	
<i>JUDC</i>	-0.35***	-0.53***	-0.38***	-0.41***	0.41***	0.79***

Notes:

All variables are defined in the appendix.

*, **, *** Significant at 10%, 5%, and 1% level, respectively.

^a For the purpose of the firm-level descriptive statistics in this table, the country variables *LGDP*, *FD*, *LAW*, *ENFORCE*, *GFC*, *GCORR*, and *JUDC* have the same value for all observations from the same country.

in other studies that countries with greater economic development have stronger institutions, that is, better enforcement of court decisions, less corruption, a better functioning judiciary, more developed financial markets, and fewer financing obstacles. Correlations among the set of country-level variables are quite large with many in excess of 0.50. However, multicollinearity is not a concern because the goal is to determine the overall

explanatory power of the set of firm-specific incentives versus the set of country-level factors, and this objective is unaffected by the presence of multicollinearity within each set of variables.

5. Research design

Empirical model

The logistic (logit) regression model in (1) is used to test the association of firm-specific incentives and country-level factors with a firm’s decision to have voluntary assurance services:

$$\begin{aligned}
 \text{Prob}(AUDIT = 1) &= \alpha + \beta_1 INVGR + \beta_2 EXTDEP + \beta_3 FOWN + \beta_4 EXP + \beta_5 OWNERSHIP \\
 &\quad (+) \quad (+) \quad (+) \quad (+) \quad (+) \\
 &+ \beta_6 SIZE + \beta_7 LGDP + \beta_8 FD + \beta_9 LAW + \beta_{10} ENFORCE + \beta_{11} GFC \\
 &\quad (+) \quad (?) \quad (?) \quad (?) \quad (?) \quad (?) \\
 &+ \beta_{12} GCORR + \beta_{13} JUDC + e \\
 &\quad (?) \quad (?)
 \end{aligned} \tag{1}$$

where the sign below each variable indicates the direction of expected association. As noted earlier, no directional predictions are made for the country-level variables. All variables in the model are from the WBES database unless stated otherwise and are defined in the Appendix. The logistic regression model in (1) is estimated using the procedure in Rogers 1993 to derive coefficients with asymptotic Z-statistics and p-values that are robust with respect to heteroskedasticity. We also use the Rogers 1993 procedure to derive robust Z-statistics and p-values that control for country clustering effects (cross-sectional dependence within countries) in addition to controlling for heteroskedasticity.¹⁸

The dependent variable *AUDIT* in (1) is coded one if a firm’s financial statements are reviewed by an external auditor and zero otherwise. Firm-specific contracting incentives are represented by the variables *INVGR*, *EXTDEP*, *FOWN*, *EXP*, *OWNERSHIP*, and *SIZE*. Country-level variables include a measure of country wealth (*LGDP*) and *FD*, plus five variables that capture different facets of a country’s legal and institutional environment (*LAW*, *ENFORCE*, *GFC*, *GCORR*, *JUDC*).

Second-stage logit model using indices to measure firm and country factors

The study’s primary test uses a second stage-logit model in which indices are developed to measure the effects of firm incentives and country factors in explaining voluntary assurance services, rather than the individual variables. The indices are developed from first-stage logit estimations that use firm variables and country variables as instruments in (1) to develop predicted values of assurance services based on firm incentives alone in (2), and country factors alone in (3):

18. The second test statistic assumes that the observations denoted by *j* are not independent but that they can be divided into *M* groups *G*₁, *G*₂, ..., *G*_{*M*} that are independent. Then the robust estimator of variance is $\hat{V} = \hat{V}(\sum_{k=1}^M u_k^{(G)} u_k^{(G)}) \hat{V}$, where $u_k^{(G)}$ is the contribution of the *k*th group to the scores $\partial \ln L / \partial \beta$. That is, application of the robust variance formula merely involves using a different decomposition of, namely, $u_k^{(G)}$ *k* = 1, ..., *M* rather than u_j , *j* = 1, ..., *N* (StataCorp 1999, 259). Given that the second test statistic is dependent on the appropriateness of the assumption about the level at which clustering is undertaken, we report both test statistics. The general tenor of results continues to be similar, irrespective of which test statistic is used.

Firm-level incentives:

$$\text{Prob}(AUDIT = 1) = \alpha + \beta_1 INVGR + \beta_2 EXTDEP + \beta_3 FOWN + \beta_4 EXP + \beta_5 OWNERSHIP + \beta_6 SIZE + \varepsilon \quad (2)$$

Country-level factors:

$$\text{Prob}(AUDIT = 1) = \alpha + \beta_7 LGDP + \beta_8 FD + \beta_9 LAW + \beta_{10} ENFORCE + \beta_{11} GFC + \beta_{12} GCORR + \beta_{13} JUDC + \varepsilon \quad (3).$$

The predicted value for each observation in the estimation of (2) is based on firm instruments and is denoted F_{Score} , and the predicted value from the estimation of (3) based on country instruments and is denoted C_{Score} . The indices F_{Score} and C_{Score} have values ranging from zero to one and represent the predicted probability an observation has an audit/review based on instruments for firm incentives and country factors, respectively. These predicted values are then used in a second-stage logit model to determine which index (firm or country) has more explanatory power in explaining audits/reviews.

The second-stage logit model uses the indices F_{Score} and C_{Score} in lieu of specific firm and country variables and is specified as follows:

$$\text{Prob}(AUDIT = 1) = \beta_0 + \beta_1 F_{\text{Score}} + \beta_2 C_{\text{Score}} + \varepsilon \quad (4)$$

where:

F_{Score} = predicted probability of having an audit/review using firm-level instruments in (2);

C_{Score} = predicted probability of having an audit/review using country-level instruments in (3).

Importantly, because F_{Score} and C_{Score} are identically scaled and measure the expected probability of having an audit/review (0 to 1) based on firm and country instruments, the coefficient values on F_{Score} and C_{Score} measure the relative weightings of firm and country factors in explaining audits/reviews. The advantage of this research design is that we can directly test if firm incentives and country factors are weighted differently in order to test the alternative predictions in Durnev and Kim 2005 and Doidge et al. 2007. If firm and country factors are equally weighted, then β_1 would be equal to β_2 ; alternatively, differential weighting occurs if β_1 and β_2 are not equal.

6. Results

Preliminary logit results based on firm variables and country variables

Table 4 reports three preliminary logistic regression models. Model 1 reports an estimation using firm variables alone, model 2 reports an estimation using country variables alone, and model 3 reports the combined model of firm and country variables in explaining the voluntary use of assurance services. All three models are significant at $p = .01$. Coefficient Z -statistics and p -values are estimated and reported in two ways. First, we control for heteroskedasticity using the procedure in Rogers 1993. Second, because country-level variables take on the same value for every firm within a country, it is possible that country effects are overstated due to repeated observations within countries (nonindependent error terms). Therefore we control for the effects of country clustering in addition to heteroskedasticity. Results are consistent across the two procedures.

Model 1 is based on firm-specific variables *alone* and is significant with a pseudo- R^2 of 14 percent and likelihood ratio of 740.56. The concordance measure, which is based on all possible pairwise combinations of firms, indicates that firm-specific variables correctly rank firms with audits/reviews higher than firms without audits/reviews 74.5 percent of the

TABLE 4

First-stage logit estimations using firm variables and country variables (*AUDIT* is the dependent variable)

$$\text{Prob}(AUDIT = 1) = \alpha + \beta_1 INVGR + \beta_2 EXTDEP + \beta_3 FOWN + \beta_4 EXP + \beta_5 OWNERSHIP + \beta_6 SIZE + \beta_7 LGDP + \beta_8 FD + \beta_9 LAW + \beta_{10} ENFORCE + \beta_{11} GFC + \beta_{12} GCORR + \beta_{13} JUDC + e$$

Variable	Predicted sign	Parameter estimates (Z-statistics) ^a		
		(1)	(2)	(3)
Intercept	?	-1.8829 (-19.33)*** (-7.05)***	-3.351 (-7.13) (-2.43)**	-4.904 (-9.43)*** (-3.46)***
<i>INVGR</i>	+	0.102 (2.88)*** (3.21)***		0.038 (0.96) (1.49)
<i>EXTDEP</i>	+	0.719 (5.73)*** (3.31)***		0.400 (3.05)*** (2.11)**
<i>FOWN</i>	+	1.031 (8.49)*** (8.59)***		1.091 (8.27)*** (7.10)***
<i>EXP</i>	+	0.325 (4.00)*** (3.06)***		1.091 (8.27)*** (3.38)***
<i>OWNERSHIP</i>	+	0.333 (2.97)*** (1.07)		0.163 (1.32) (0.73)
<i>SIZE</i>	+	0.956 (17.48)*** (8.91)***		0.872 (15.02)*** (10.22)***
<i>LGDP</i>	?		0.531 (11.91)*** (3.77)***	0.431 (9.12)*** (3.37)***
<i>FD</i>	?		-0.033 (-1.67)* (-0.54)	-0.027 (-1.38) (-0.55)
<i>LAW</i>	?		0.218 (1.36) (0.55)	0.311 (1.87)* (0.87)
<i>ENFORCE</i>	?		1.212 (1.61) (0.56)	0.019 (0.24) (0.10)
<i>GFC</i>	?		-1.562 (-12.28)*** (-4.06)***	-1.314 (-10.21)*** (-4.14)***

(The table is continued on the next page.)

TABLE 4 (Continued)

Variable	Predicted sign	Parameter estimates (Z-statistics) ^a		
		(1)	(2)	(3)
<i>GCORR</i>	?		1.663 (11.85)*** (4.33)***	1.428 (9.45)** (4.15)***
<i>JUDC</i>	?		0.015 (0.09) (0.03)	0.014 (0.08) (0.03)
Pseudo R^2		0.14	0.11	0.21
Model significance		0.01	0.01	0.01
Likelihood ratio		740.56	540.79	1070.76
Concordant pairs		74.50%	70.80%	79.40%
<i>N</i>		3829	3829	3829

Notes:

All variables are defined in the appendix.

*, **, *** Significant at 10%, 5%, and 1% level, respectively. The first Z-statistic is based on robust standard errors correcting for heteroskedasticity, and the second Z-statistic is based on robust standard errors clustered by country in addition to correcting for heteroskedasticity.

time. The coefficients on all firm-level variables are in the predicted direction and are statistically significant at the 0.01 level in both tests, with the exception of *OWNERSHIP*, which is not significant when controlling for the effects of country clustering. These results indicate that observations with more growth opportunities, greater external financing, more exports, foreign owners, limited liability corporations, and larger firms are all more likely to have voluntary audits/reviews.

Model 2 examines the role of country factors *alone* in explaining voluntary assurance services. The pseudo- R^2 of model 2 is 11 percent, the likelihood ratio is 540.79, and concordant pairs are 70.8 percent. Three variables are significant, *LGDP* plus two of the specific country-level variables (*GFC*, *GCORR*). As noted above, correlations among the country variables are large, in particular the correlations with *LGDP*, and this may explain in part why *FD*, *LAW*, *LEGAL*, and *JUDC* are not individually significant.

Model 3 in Table 4 reports the estimation in which all firm and country variables are combined. Most of the individual variables that are statistically significant in model 1 and model 2 are also significant in the combined model. Importantly, note that the pseudo- R^2 for the combined model is 21 percent which is higher than the 14 percent of model 1 using only firm-specific variables, and the 11 percent of model 2 using only country-level variables. In addition, the likelihood ratio and concordant pairs in the combined model are greater than in the other two models. The combined model clearly has greater explanatory power than either the firm model alone or country model alone.

The most important result in Table 4 is that firm and country factors are *each* important in explaining voluntary assurance services, over and above the effect of the other set of factors. To formally verify this, untabulated Wald statistics indicate that the set of firm-specific variables and set of country-level variables are each incrementally significant at the 0.01 level when the other set of variables is also included in the model.

In sum, the results in Table 4 indicate that a firm's voluntary use of assurance services is explained by *both* firm-specific variables related to contracting incentives and general country-level factors that affect the contracting environment. Thus, even though prior

research finds that country-level factors largely shape accounting practices, the evidence from voluntary audits/reviews indicates that firm incentives are also important around the world, irrespective of a country's institutional characteristics.

Second-stage logit model testing assurance service as a substitute versus complement

This section reports the primary test of the substitution versus complement predictions from Durnev and Kim 2006 and Doidge et al. 2007. To do this we examine the relative weighting of firm incentives and country factors in strong countries versus weak countries based on a partition of countries into low and high GDP per capita. There is no a priori basis for the partition of countries, so we simply partition into low and high GDP per capita countries based on median country's GDP per capita of \$2,301 in our sample. The partition of countries by low and high GDP per capita creates a set of countries with weaker institutions (low GDP) versus those countries with stronger institutions (high GDP). Doidge et al. (2007) partition countries by level economic development (GDP per capita) in order to draw a sharp contrast between countries with weak and strong institutions. The rationale for partitioning by GDP per capita stems from the work of La Porta et al. 1998 and Claessens and Laeven 2003 who show that economically developed countries have stronger legal systems and other institutions that better facilitate private contracting.

The analysis formally tests if the set of firm factors (measured by the index F_{Score}) and the set of country factors (measured by the index C_{Score}) are equally weighted in explaining a firm's decision to have voluntary assurance services. The full sample model estimation is reported in the first column of Table 5. The coefficient Z-statistics are significant at $p = 0.01$ for the separate variables F_{Score} and C_{Score} and indicate that both factors are significantly associated with audits, consistent with the estimations in Table 4. Equality of the two coefficients is tested with a Wald statistic and is insignificant at the 0.10 level, so the null hypothesis of equality cannot be rejected. Thus for the full sample estimation we conclude that firm and country factors are of equal importance in explaining voluntary use of assurance services. Note also the Pearson correlation between F_{Score} and C_{Score} is only +0.24: while the correlation is significant at $p < 0.01$, it appears that the two indices are largely measuring different attributes.

The next analysis compares the coefficients on F_{Score} and C_{Score} for separate model estimations using low GDP per capital countries and high GDP per capita countries. Results for these two partitions are reported in columns 2 and 3 in Table 5. Note again that coefficients on F_{Score} and C_{Score} are positive and significant in all estimations indicating that both factors affect assurance services.

For the low-GDP countries, the difference between the coefficients on F_{Score} and C_{Score} is positive and statistically significant ($p < 0.05$), rejecting the null hypothesis of equality. The direction of the difference indicates that firm incentives are weighted relatively more than country factors in explaining audits/reviews, that is, 4.399 for F_{Score} versus 3.334 for C_{Score} ; specifically, firm incentives are weighted 31.94 percent more heavily than country factors $((4.399/3.334) - 1) * 100$ in low-GDP countries.

In contrast, for the high-GDP countries, there is no statistical difference in the coefficients on F_{Score} and C_{Score} . Therefore the null hypothesis of equality cannot be rejected at the 0.10 level and we conclude that the firm incentives and country factors weighted equally in explaining voluntary audits reviews in high-GDP countries.

Taken together, the estimations in Table 5 indicate that firm factors are more important (relative to country factors) in weak countries than in strong countries, which is consistent with the substitution argument in Durnev and Kim 2005. In contrast, the "complement" view in Doidge et al. 2007 is not supported because it predicts that firm incentives will be relatively less important in weak countries than in strong countries, which we do not find to be the case.

TABLE 5

Second-stage logit estimations testing the relative importance of firm and country indices in low-GDP countries and high-GDP countries (*AUDIT* is the dependent variable)

$$\text{Prob}(AUDIT = 1) = \beta_0 + \beta_1 F_{\text{Score}} + \beta_2 C_{\text{Score}} + \varepsilon$$

Variable	Parameter estimates (Z-statistics)		
	Full sample	Low GDP ^a	High GDP ^b
Intercept	-4.098 (-25.49)*** (-12.57)***	-3.682 (-19.19)*** (-8.07)***	-4.512 (-15.37)*** (-8.21)***
F _{score}	4.191 (20.39)*** (12.04)***	4.399 (16.57)*** (9.12)***	3.994 (13.57)*** (7.93)***
C _{score}	3.786 (16.83)*** (8.12)***	3.334 (10.22)*** (4.04)***	4.595 (12.09)*** (6.39)***
Wald statistic: Fscore = Cscore	1.81	5.85**	1.68
Pseudo R ²	0.21	0.23	0.18
Likelihood ratio	1180.54	498.28	432.98
Concordant pairs (%)	79.20	77.00	77.00
N	3829	1989	1840

Notes:

*, **, *** Significant at 10%, 5%, and 1% level, respectively. The first Z-statistic is based on robust standard errors correcting for heteroskedasticity, and the second Z-statistic is based on robust standard errors clustered by country in addition to correcting for heteroskedasticity.

^a The low-GDP sample consists of firm observations from 31 countries with GDP per capita of \$2302 or less, which represents the lower half of country GDP in the sample. The 31 countries are Albania, Armenia, Azerbaijan, Bangladesh, Belarus, Bolivia, Bosnia, Bulgaria, Cambodia, China, Dominican Republic, Ecuador, El Salvador, Georgia, Guatemala, Haiti, Honduras, India, Indonesia, Kazakhstan, Lithuania, Moldova, Nicaragua, Pakistan, Peru, Philippines, Romania, Russia, Ukraine, Uzbekistan, and West Bank-Gaza.

^b The high-GDP sample consists of firm observations from 31 countries with GDP per capita greater than \$2302, which represents the higher half of country GDP in the sample. The 31 countries are Argentina, Belize, Brazil, Canada, Chile, Colombia, Costa Rica, Croatia, Czech Republic, Estonia, France, Germany, Hungary, Italy, Malaysia, Mexico, Panama, Poland, Portugal, Singapore, Slovakia, Slovenia, Spain, Sweden, Thailand, Trinidad and Tobago, Turkey, United Kingdom, United States, Uruguay, and Venezuela.

F_{Score} = an index which is the predicted probability of audits using firm-level instruments in equation 2, and estimated from model 1 in Table 4;

C_{Score} = an index which is the predicted probability of audits using country-level instruments in equation 3, and estimated from model 2 in Table 4.

All other variables are defined in the Appendix.

Partitions based on legal origin

Next we examine subsamples of firms based on an alternative partition of countries by legal tradition (common law, code law, socialist). Prior cross-country research in accounting and finance finds that a country's legal system is an important variable in explaining many firm-level decisions (e.g., Ball et al. 2000). Based on the descriptive statistics in Table 1, common law countries generally have the strongest institutions, and socialist countries the weakest institutions, with code law countries in the middle. Specifically,

Table 1 indicates that five of the six country-level variables are significantly different between common law and socialist countries (in a direction indicating stronger institutions in common law countries). In addition, three of six variables are significantly different between common law and code law countries (in the direction showing common law with stronger institutions). Finally, in the comparison of code law and socialist countries, two of six country-level variables are significant in the direction showing stronger code law institutions.

Table 6 reports the results of reestimating (4) for subsamples partitioned by legal origin. These tests show that firm and country factors are equally weighted in both common law countries and code law countries. However, for the 23 socialist transitional economies in the sample, the coefficients on firm factors and country factors are significantly different at the 0.01 level. Specifically, firm factors (F_{Score}) are weighted more heavily than country factors (C_{Score}) as indicated by the respective coefficients of 4.518 (firm) versus 2.815 (country) for the socialist countries. Based on these coefficients, firm factors are weighted 60 percent more heavily than country factors $((4.518/2.815) - 1) * 100$ in explaining voluntary assurance services for the sample of transitional socialist economies.

TABLE 6
Alternative estimations based on partition of countries by legal regimes (*AUDIT* is the dependent variable)

$$\text{Prob}(AUDIT = 1) = \beta_0 + \beta_1 F_{Score} + \beta_2 C_{Score} + \varepsilon$$

Variable	Predicted sign	Parameter estimates (Z-statistics) ^a		
		Common law	Code law	Socialist
Intercept	?	-3.619 (-7.13)*** (-9.01)***	-4.089 (-4.08)*** (-4.98)***	-3.917 (-16.45)*** (-7.52)***
F_{Score}	+	3.628 (5.60)*** (5.02)***	3.879 (3.87)*** (8.84)***	4.518 (15.26)*** (6.81)***
C_{Score}	+	3.498 (6.58)*** (5.37)***	4.193 (4.19)*** (3.51)***	2.815 (6.81)*** (3.52)***
Wald statistic: $F_{score} = C_{score}$		0.01	0.34	11.06***
Pseudo R^2		0.15	0.15	0.14
Likelihood ratio		102.18	288.76	345.65
Concordant pairs (%)		75.90	76.00	75.00
<i>N</i>		525	1523	1781

Notes:

*, **, *** Significant at 10%, 5%, and 1% level, respectively. The first Z-statistic is based on robust standard errors correcting for heteroskedasticity, and the second Z-statistic is based on robust standard errors clustered by country in addition to correcting for heteroskedasticity.

F_{Score} = an index which is the predicted probability of audits using firm-level instruments in equation 2, and estimated from model 1 in Table 4.

C_{Score} = an index which is the predicted probability of audits using country-level instruments in equation 3, and estimated from model 2 in Table 4.

All other variables are defined in the Appendix.

The results in Tables 5 and 6 raise the question of whether the results are driven by the set of 31 low-GDP countries (as in Table 5) or by the set of 23 socialist countries (as in Table 6), as there is some overlap between the two classifications. To clarify this we reclassify the 31 low-GDP countries in Table 5 into 16 countries with nonsocialist legal traditions (common or code law) and 15 countries with a socialist legal tradition. The models are reestimated on these subsamples and are reported in Table 7.

For the nonsocialist low-GDP countries, the difference in firm and country factors is only weakly significant at the 0.10 level. In contrast, for the socialist countries, the coefficient on firm factors is significantly larger than that for country factors at the 0.01 level. We conclude that the result in Table 5 appears to be largely driven by the socialist countries and that this partition better identifies a set of countries with demonstrably weaker institutions where assurance services are more likely to improve governance structures (Durnev and Kim 2005).

TABLE 7

Further analysis of low-GDP countries partitioned by legal regime (*AUDIT* is the dependent variable)

$$\text{Prob}(AUDIT = 1) = \beta_0 + \beta_1 F_{\text{Score}} + \beta_2 C_{\text{Score}} + \varepsilon$$

Variable	Parameter estimates (Z-statistics)	
	Non-socialist	Socialist
	low GDP ^a	low GDP ^a
Intercept	-3.911 (-8.57)***	-3.046 (-10.32)***
F_{score}	(-3.64)*** 4.656 (11.00)***	(-4.00)*** 3.878 (910.74)***
C_{score}	(8.50)*** 3.342 (5.08)***	(4.43)*** 1.208 (2.18)**
Wald statistic: $F_{\text{score}} = C_{\text{score}}$	(1.92)* 2.85*	(0.89)*** 18.24***
Pseudo R^2	0.17	0.08
Likelihood ratio	186.11	127.79
Concordant pairs (%)	77.60	70.40
N	817	1172

Notes:

*, **, *** Significant at 10%, 5%, and 1% level, respectively. The first Z-statistic is based on robust standard errors correcting for heteroskedasticity, and the second Z-statistic is based on robust standard errors clustered by country in addition to correcting for heteroskedasticity.

F_{Score} = an index which is the predicted probability of audits using firm-level instruments in equation 2, and estimated from model 1 in Table 4;

C_{Score} = an index which is the predicted probability of audits using country-level instruments in equation 3, and estimated from model 2 in Table 4.

All other variables are defined in the Appendix.

^a The low-GDP sample consists of firm observations from 31 countries whose GDP per capita is \$2302 or less and is partitioned in 16 countries with common or code law legal traditions (non-socialist) and 15 countries with a historically socialist legal tradition.

Sensitivity analysis of voluntary IAS adoption

The WBES database includes information on the use of IAS. This raises the question of whether the results in our study might be driven by a firm's use of IAS rather than the voluntary adoption of external audits/reviews (see also footnote 5). This seems unlikely as the correlation between the adoption of IAS and the use of assurance services is only 0.35 for our sample. However, to further examine this issue we restrict the analysis to the subset of sample firms that do not use IAS to assure there is no confounding of voluntary external audits/reviews and the use of IAS. The restricted sample consists of 2,127 firms and the models in Tables 5 and 6 are reestimated for this reduced sample. Untabulated results yield statistical results that are comparable to those reported in Tables 5 and 6. Specifically, for the low-GDP countries the coefficient on F_{score} is larger than that on C_{score} and the difference is statistically significant ($p < 0.01$). As in Table 6, this result is driven by the socialist transitional economies. Thus there is no evidence that our results are confounded by those firms in the sample that use IAS as a reporting standard.

7. Discussion and conclusion

Recent accounting research suggests that the contracting environment stemming from a country's legal system and other institutional characteristics plays an important role in shaping accounting and auditing practices within a country and explaining differences in accounting practices across countries (e.g., Ball et al. 2000; Ball 2001; Kothari 2000; Francis et al. 2003; Leuz et al. 2003; Fan and Wong 2005; Choi and Wong 2007; Francis and Wang 2008). An important question that emerges from this literature is the relative importance of firm-specific incentives in explaining variation in firm-level governance practices such as accounting and auditing choices. In the limit, firm-level incentives could be dominated by the country-level institutional factors that shape and define the contracting opportunity set. We pursue this research question by examining the voluntary use of external assurance services for a World Bank sample of 3,829 private entities in 62 widely diverse countries and economies. As a caveat we iterate that the World Bank survey only asked if firms provide owners with financial statements that are reviewed by an external auditor. While we assume this refers to an audit, it is possible it encompasses other forms of external assurance such as a more limited review.

Recent studies by Durnev and Kim 2005 and Doidge et al. 2007 argue that firm-specific incentives and country characteristics are both important in the firm's decision to voluntarily adopt better governance structures such as an external audit/reviews. Our evidence is consistent with this and indicates that firm-specific incentives and country factors are both significant in explaining voluntary use of assurance services. However, the arguments in Durnev and Kim 2005 and Doidge et al. 2007 differ with respect to the relative importance of firm incentives versus country-level institutions. Our evidence is consistent with the substitution argument in Durnev and Kim rather than the complement view of Doidge et al. Specifically, we find that firm incentives for audits/reviews are relatively more important than country factors in weak countries than in strong countries, which is consistent with the idea that voluntary assurance services can substitute for the weaknesses in a country's institutional environment.

The current conventional wisdom in accounting is probably closer to the complement view of Doidge et al. 2007 than to the substitution argument in Durnev and Kim 2005. Accounting practices are viewed as being of higher quality in those countries with stronger underlying institutions and of lower quality in countries with weaker institutions (e.g., Ball 2001; Kothari 2000). However, our results suggest that this is not necessarily the case, at least with respect to the private entities in our sample. Specifically, we find that firm incentives for voluntary assurance services (a way of improving the quality of accounting

reports) are relatively more important in the transitional socialist countries with extremely weak institutions. In this respect our results are consistent with Fan and Wong 2005 who find evidence that better quality audits serve as a governance substitute in East Asian countries which generally have weak institutions with respect to the protection of investor rights.

Appendix

Definition of variables (unless noted otherwise data come from the WEBS Survey (World Bank 2002))

Dependent Variable:

AUDIT = 1 if a firm's financial statements are reviewed by an external auditor, and 0 otherwise. We characterize this as an audit, but recognize that it could refer to lesser forms of assurance such as a review.

Firm Variables:

INVGR = expected growth rate in investment over the future three years; if it is missing for a firm it is replaced by the actual growth rate in investment over the past three years.

EXTDEP = the proportion of a firm's financing in the last year from external sources (equity, local commercial banks and foreign banks).

FOWN = 1 if the nationality of some owners is different than the place of domicile of the firm, 0 otherwise.

EXP = 1 if a firm has export sales, and 0 otherwise.

OWNERSHIP = 1 if a firm is organized as a limited liability corporation, 0 if a firm is organized in the form of partnership, sole proprietorship, or cooperative.

SIZE = 1 if firm has less than 50 employees; 2 if firm has 51 to 500 employees; 3 if firm has more than 500 employees.

Country Variables:

LGDP = natural logarithm of a country's purchasing power-adjusted gross domestic product per capita (in constant 1985 US\$) averaged over 1995–1999. (Source: World Bank 2004)

FD = the sum of *STKMKT* and *FININT*; *STKMKT* is the stock market development index that equals the sum of (standardized indices of) market capitalization over gross domestic product (GDP), total value traded over GDP, total value traded over market capitalization; and *FININT* is the financial intermediary development index that equals the sum of (standardized indices of) the ratio of liquid liabilities to GDP and the credit going to the private sector over GDP. It is calculated based on time series data from 1993 to 2004. (Source: World Bank 2004)

LAW = 1 if a country has a common law legal tradition, and 0 otherwise. (Source: La Porta et al. 1998; Ayyagari, Demirgüç-Kunt, and Maksimovic 2006)

(The table is continued on the next page.)

Appendix (Continued)

<i>ENFORCE</i>	=	legal enforcement, averaged over all firms in a country by using the responses to the question: “In resolving business disputes, do you believe your country’s court system’s decisions are enforced?” The responses take values between 1 to 6: where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6, never. The average value is subtracted from 6 so high values reflect strong enforcement.
<i>GFC</i>	=	general financing constraints, averaged over all firms in a country by using the responses to the question: “How problematic is financing for the operation and growth of your business?” The responses take values between 1 to 4: where 1 indicates no obstacle; 2, minor obstacle; 3, moderate obstacle; 4, major obstacle.
<i>GCORR</i>	=	general corruption constraint, averaged over all firms in a country by using the responses to the question: “How problematic is corruption for the operation and growth of your business?” The responses take values between 1 to 4: where 1 indicates no obstacle; 2, minor obstacle; 3, moderate obstacle; 4, major obstacle.
<i>JUDC</i>	=	judicial constraint in countries, averaged over all firms in a country by using the responses to the question: “How problematic is the functioning of the judiciary for the operation and growth of your business?” The responses take values between 1 to 4: where 1 indicates no obstacle; 2, minor obstacle; 3, moderate obstacle; 4, major obstacle.

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