

The Role of Firm-Specific Incentives and Country-Level Factors in the Voluntary Demand for Independent Audits*

by

Jere R. Francis, Inder K. Khurana, Xiumin Martin, and Raynolde Pereira
College of Business
University of Missouri-Columbia
Columbia, MO 65211 USA

Comments Welcome
Please do not cite without permission

First Version: February, 2004
Current Version: November 27, 2005

Contact Author

Jere R. Francis

Phone: 573-882-5156

e-mail: francis@missouri.edu

*We appreciate the comments of Marlene Willekens and other conference participants at the 3rd European Audit Research Network Symposium, and comments of workshop participants at Hong Kong Polytechnic University and Université Paris Dauphine.

The Role of Firm-Specific Incentives and Country Factors in the Voluntary Demand for Independent Audits

ABSTRACT: Prior research characterizes independent external audits as a mechanism to monitor the performance of contracting parties, reduce information asymmetry and mitigate the firm's agency problems. In this paper, we evaluate the importance of both firm-specific and endogenous country factors in explaining the voluntary demand for independent audits in an unregulated setting. Using a World Bank sample of 5,082 private firms from 62 widely diverse countries, we report three primary findings. First, we find that firm-specific incentives relating to agency costs and contracting are significant in explaining the voluntary use of audits around the world, over and above country-level factors such as legal environment, investor protection, and level of economic development. Second, country factors are also significant in explaining voluntary audits over and above firm-specific incentives. Third, firm-specific incentives are relatively more important in explaining voluntary audits in those countries with stronger legal environments. Our results are consistent with the argument that the net payoffs from "stricter" monitoring and better corporate governance are affected by both firm and country factors. However, unlike Doidge et al. (2005), we find that firm incentives are still important in explaining the demand for stricter governance in all countries, even countries with weaker institutions and legal environments where auditing is potentially of lower value and less credibility due to weak enforcement. Finally, our evidence supports that a *laissez-faire* approach may be more appropriate rather than mandating audits for private companies (as occurs in European Union countries). The reason is that audits occur more frequently in countries with stronger institutions where audits are more credible, and private incentives affect the decision to have an audit in weaker countries as well as stronger countries.

Key Words: Auditing, Agency Theory, Investor Protection, Private Firms, Regulation

The Role of Firm-Specific Incentives and Country Factors in the Voluntary Demand for Independent Audits

1. Introduction

Agency theory defines the firm as a nexus of contracts in which information asymmetry creates a potential conflict of interest exist between contracting parties (Jensen and Meckling 1976). Accounting reports and independent audits facilitate contracting by reducing information asymmetry and monitoring the performance of the contracting parties (Watts and Zimmerman 1983).¹ While important, this line of agency theory research does not distinguish the contracting environment that varies across countries and which in turn influences the contracts in place and the related demand for independent audits. Reese and Weisbach (2000) note the influence of a country's legal regime as follows:

“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.”

The recognition that country-level factors are important determinants of the contracting environment and governance structure leads to our research question: are firm-specific incentives important in explaining the firm's decision to voluntarily have an audit, after controlling for endogenous country characteristics that influence the contracting environment? At one extreme is the traditional agency view that firm-specific contracting drives the demand for better governance and monitoring structures (including auditing) and that these incentives hold around the world, irrespective of differences in legal systems and other country-level institutions. At the other extreme is that view that contracting and governance structures are fundamentally shaped

¹ The independent audit is viewed as “part of the efficient technology for organizing firms” (Watts and Zimmerman 1983, p. 614). Consistent with this view, Chow (1983) finds that cross-sectional differences in potential conflicts of interest explain why public-listed firms voluntarily submitted to independent audits in the 1920s before such audits were required.

by country-level factors. For example, Ball (2001) suggests that in countries without a strong legal infrastructure, the role of accounting and auditing in contracting is minimal and other institutional mechanisms are more important such as “relational financing” and the close involvement of banks in the operations and governance structures of firms. Given these competing views about the relative role of firm incentives and more general country factors, it becomes an important empirical issue to identify settings in which firm-specific incentives are important in the determination of a firm’s governance structure, including accounting and auditing practices.²

A unique feature of our study is that we examine small and medium-sized non-public enterprises, using data from the World Business Environment Survey (WBES) carried out by the World Bank in late 1999 and early 2000 (World Bank 2002).³ The WBES survey specifically asked each enterprise if it provided owners with financial statements reviewed by an external auditor. The sample comprises 5,082 non-public enterprises from 62 diverse countries. The advantage of using non-public enterprises is that it provides a setting in which accounting choices such as the decision to have an external audit can be investigated as a truly voluntary economic decision rather than the consequence of regulatory mandates (Ball and Shivakumar 2005).

² Recent research is more nuanced and suggests that the net payoffs to better governance structures are not identical in all settings, but instead are dependent on specific combinations of firm incentives and country characteristics (Doidge et al. 2005; Durnev and Kim 2005). This literature is discussed in the next section.

³ The WBES data includes both publicly-listed companies and private companies, and has been used by Beck et al. (2004a) who investigate the impact of bank supervisory policies on firm financing obstacles, Beck et al. (2004b) who examine how legal system traits – judicial independence from the government and the ability of courts to adapt to changing conditions – influence the obstacles that firms face in raising capital, and Beck et al. (2005) who examine the effect of financial, legal, and corruption problems on firm’s growth rates. However, we exclude publicly-listed companies from our analysis in order to provide a clean test of the voluntary (unregulated) demand for audits. As explained later, we also drop European Union countries as a sensitivity analysis because some of the firms in our sample may be required to have an audit under EU accounting rules.

Using data available in the WBES database, we investigate the incentive for voluntary auditing based on firm-specific contracting costs, in addition to role of country-level effects. Auditing improves the credibility and transparency of accounting which reduces information asymmetry thus facilitating contracting and the firm's access to external financing. Firms are more likely to have better governance structures (including auditing) in order to facilitate contracting and external financing if they have (1) growth opportunities, (2) external financing, (3) foreign owners, (4) export sales, (5) a corporate ownership structure, and (6) concentrated ownership. We also examine a set of country-level characteristics that can affect the payoffs from better governance structures including the strength of the legal system in enforcing contracts, the quality of the judicial system, the general level of corruption, and financing constraints in the economy. We also include a variable for country wealth, measured by gross domestic product per capital. Wealthier countries have a more resources to develop the legal and institutional infrastructure that enables private contracting (La Porta et al. 1998; Claessens and Laeven 2003).

Our findings are as follows. A firm's voluntary use of auditing is explained by both firm-specific contracting incentives and by more general country-level factors, and each set of factors alone (firm and country) has significant explanatory power over and above the other set of factors alone. In other words, firm-specific contracting explains the voluntary use of auditing around world irrespective of endogenous country-level institutions, but country-level factors also affect the level of voluntary auditing. We also partition the sample into those countries with low versus high levels of economic development to proxy for "weak" and "strong" institutions that affect the general contracting environment in a country. As expected, the audit rate is higher in more developed countries (63 percent) than in less developed countries (41 percent), consistent

with the argument that the net payoffs from better governance are more likely to be positive in countries with stronger institutions. Firm-specific incentives are relatively more important (than country factors) in countries with higher levels of economic development and (implicitly) stronger institutions; while in less developed countries, firm and country factors are of equal importance in explaining the voluntary use of auditing.

Our results suggest that the demand for voluntary audits by small and medium-sized non-public enterprises around the world is fundamentally shaped by firm-specific contracting incentives. In particular, firm-specific factors are significant in both “weak” and “strong” countries and are never dominated by country effects (even though country factors are also important). The remainder of the paper is organized as follows. In section 2 we review relevant governance literature to develop testable predictions about the voluntary demand for audits. Section 3 describes the WBES data and sample. Section 4 describes the research design and variables used in this study. Section 5 reports the results and section 6 concludes the paper.

2. Prior Research

There are two competing views regarding the firm’s incentives to adopt better governance structures. One view is that governance structures are driven primarily by a firm’s agency and contracting costs, and the competing view is that governance structures are fundamentally endogenous to broader country factors such as legal systems and other institutions that facilitate private contracting.

Recently, more nuanced arguments have been advanced by Durnev and Kim (2005) and Doidge et al. (2005) which recognize the importance of both firm incentives and endogenous country characteristics. Durnev and Kim (2005) recognize the role of firm-specific factors in the adoption of governance structures that ameliorate conflicts in interest. However, they argue that

the impact of firm-specific factors is more important when the underlying institutional structures in a country that facilitate contracting are relatively weak. Their point is that governance mechanisms, such as having an independent audit, can serve as a substitute for absent or weak country-level institutions that constrain the behavior of contracting parties. However, in countries with stronger legal systems and other institutions, a firm has less to gain from independent audits because existing country-level institutions impose constraints on contracting parties and may therefore provide sufficient protection. The empirical prediction that emerges under this view is that the voluntary demand for auditing is greater in countries with weaker legal systems because auditing serves as a substitute for the absence of other institutions that facilitate private contracting.

Doidge et al. (2005) also argue that country-level factors can influence the costs and benefits of better governance. However, they come to a different conclusion than Durnev and Kim (2005). In countries with weak legal institutions, they argue that the payoffs of improved governance structures are inherently lower because they lack credibility. In addition, since capital markets are less developed in such countries, even if improved governance structures are credible, they may not necessarily improve the firm's access to external financing. The implication of this argument is that weak institutions in a country limit the role of firm-specific incentives with respect to voluntary adoption of independent audits.⁴ However, in countries with stronger legal systems the cost-benefit payoff structure changes. Specifically, in these countries a firm's voluntary adoption of better governance is more likely to be viewed as

⁴ 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. First, the institutional environment supports an opaque business environment which limits the effectiveness of the audit function. Second, external audit loses its value when auditor's adverse opinion does not result in significant consequences in these countries where legal enforcement is weak. Third, the lack of audit expertise in these countries weakens the independent auditors' monitoring role.

credible, and is thus more likely to facilitate contracting with external parties. In addition, since capital markets are more developed in these countries, improved governance structures are also more likely to improve the firm's access to external financing, thus producing a net positive payoff. The prediction under this view is that the demand for auditing is greater in countries with stronger legal systems because auditing (and governance mechanisms more generally) require enabling country-level institutions in order for improved governance to have sufficient credibility to create "net" positive payoffs for firms with agency and contracting costs. What this means is that firm-specific incentives will dominate country factors in explaining the voluntary adoption of better governance in countries with stronger legal environments and other institutions that facilitate private contracting.

Our primary research question is whether or not firm-specific contracting incentives explain the voluntary use of audits, after controlling for endogenous country factors that can also affect the contracting environment and net payoff structure of governance mechanisms. However, as a secondary research question, we also investigate the relative importance of firm incentives and country factors conditional on a country's level of economic development which is a proxy for enabling institutions that support private contracting.

3. Sample

Our sample is based on the primary dataset from the World Bank's World Business Environment Survey (WBES). The survey was conducted to identify perceived constraints on enterprise growth for a large cross-regional set of member countries in late 1999 and early 2000 (World Bank 2002).⁵ It uses a stratified random sampling methodology uniformly across countries to draw a sample from a well-defined universe of firms (Batra et al. 2003). In particular,

⁵ While it is possible that individual firms may subjectively report perceptions, it is not clear that this would bias the results in any particular direction. Moreover, prior research (e.g., Beck et al. 2004b) provides evidence on the validity of the WBES data.

at least 100 firms meeting the sectoral, size, location, and ownership criteria were surveyed in each country.⁶ The sample size was limited by budget and time constraints, and varied across economies, and data were collected through face-to-face interviews at the managerial level in enterprises in most regions.⁷

Beck et al. (2005) note that the WBES database not only has very broad country representation but also has excellent coverage of firms in terms of size. This is particularly important, given that most cross-country studies in accounting focus on large publicly-listed corporations from a relative small number of countries. Importantly, for most of the small and medium size firms covered by the WBES database, the decision to have audits is voluntary rather than mandatory which allows a better test of the underlying economic incentives.⁸

The WBES database covers firms from 80 countries, although 18 African countries in the database were dropped due to widespread missing data, leaving 62 countries in our sample. An important aspect of the WBES data 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 62 countries in our sample (and over half the observations) are not among the set of 49 countries in La Porta et al. (1998) that is widely used in other cross-country research. The omitted countries in these prior studies include important countries like China and Russia, former eastern bloc countries like Hungary and Poland, as well as small countries not previously covered such as Bolivia and Guatemala.

⁶ For example, sectoral composition in terms of manufacturing (including agro-processing) versus services was determined by relative contribution to gross domestic product in each country.

⁷ Batra et al. (2003) note that Japan was not surveyed because of the expense, and mail surveys were predominately used in Africa.

⁸ To the extent that audited financial statements might not be "voluntary" for some European Union and Chinese firms with limited liability in our sample, we repeat all empirical tests by excluding observations from the EU and China, and find that our inferences remain unaltered. Countries within the EU exempted some smaller private companies from national requirements to have audited financial statements under EU rules in force at the time of the survey (IAN 2005); however, the WBES data is not sufficiently detailed for us to identify these specific companies.

The survey asks firm-specific questions about the use of an external auditor to review financial statements provided to owners, and additional information on operations, ownership structure, enterprise financing, and export performance. The survey also has a large number of general questions regarding the effect on business operations of taxation, regulation, performance of the country's financial sector, legal environment, and corruption. For each country in our sample, we use GDP per capita in U.S. dollars to measure the level of economic development (IMF 2003).

4. Methodology

4.1 Empirical Models

A simple logit or logistic regression model is initially used to test the association of firm-specific incentives and country factors with firm's decision to have an audit. Because the number of observations varies across countries, we use weighted logistic regression (which weights each country equally) for all estimations so that observations receive more (less) weight in countries with fewer (more) firm-year observations. As a sensitivity analysis, we also estimated the model using ordinary (unweighted) least squares, and obtained qualitatively identical results. The logit model is defined as follows in equation (1):

$$\begin{aligned} \text{Prob (Audit=1)} = \alpha + & \beta_1 \text{INVGR} + \beta_2 \text{EXTDEP} + \beta_3 \text{FOWN} + \beta_4 \text{EXP} + \beta_5 \text{SIZE} + \\ & \beta_6 \text{OWNERSHIP} + \beta_7 \text{CONTROL} + \beta_8 \text{LGDP} + \beta_9 \text{LEGAL} \\ & \beta_{10} \text{GFC} + \beta_{11} \text{CORR} + \beta_{12} \text{JUD} + e \end{aligned} \quad (1)$$

where the sign below the coefficients indicates the direction of expected influence and model variables are defined as follow:

AUDIT = 1 if a firm's financial statements are reviewed by an external auditor, and 0 otherwise;

INVGR	=	1 if a firm's expected growth in investment over the next three years is positive, 0 otherwise;
EXTDEP	=	1 if a firm obtains financing over the last year from equity, local commercial, and foreign banks, 0 otherwise;
FOWN	=	1 if the nationality of some owners of a firm is different than the place of domicile of the firm, 0 otherwise;
EXP	=	1 if a firm is an exporting firm, 0 otherwise;
SIZE	=	1 if a firm has less than 50 employees; 2 if a firm has 51 to 500 employees; 3 if a firm has more than 500 employees;
OWNERSHIP	=	1 if a firm is organized in the form of partnership or sole proprietorship, 0 otherwise;
CONTROL	=	Percentage shares that the top three stakeholders hold; and
LGDP	=	Natural logarithm of purchasing power-adjusted Gross Domestic Product per capital (in US. Dollars) averaged over 1995 – 1999;
LEGAL	=	Legal development, averaged over all firms in a country by using the responses to the question; 'in resolving business disputes, do you believe decisions by your country's court system to be enforced?' The responses take values between 1 to 6: where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6 never.
GFC	=	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.
CORR	=	General corruption constraints, 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.
JUD	=	General legal constraints, 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.

Firm-specific contracting incentives are represented by the variables INVGR, EXTDEP, FOWN, EXP, SIZE, OWNERSHIP, and CONTROL. The country factors are represented by the variables LGDP, LEGAL, GFC, CORR, and JUD.⁹

In addition to the logit model in equation (1), we also utilize a two-tier cascaded logit framework to examine the relative incremental weighting for firm-specific and country-level factors in explaining the use of voluntary audits (Bell et al. 1991; Summers and Sweeney 1998). A cascaded logit methodology permits groups of variables (in our case, firm-specific or country level) to be consolidated into a single numerical index representing the probability of having an audit. As noted by Summers and Sweeney (1998, p. 135), “the ability to weight groups of factors to assess their incremental contribution based upon maximum likelihood estimates makes the cascaded logit analysis preferable to a single stage logit approach.”

The application of cascaded logit analysis involves the estimation of three separate models. The first of these models uses only firm-specific variables. The second model uses only country-level factors (based on indicator variables). These two models represent the first-tier of the cascaded logit analysis and are defined as follows in equations (2) and (3):

⁹ As noted previously, 26 countries in our sample are also covered in La Porta et al. (1998), who document cross-country differences in legal systems with respect to investor protection and enforcement. Eighteen of the 26 countries are code law countries and 8 are common law countries. When we correlate the LEGAL variable (derived from the WBES database) for our sample of 26 countries with civil/common law indicator variable that takes on the value of 1 for civil law countries and 0 otherwise, we find that the correlation to be -0.34 and statistically significant at the 0.01 level. Similarly, when we correlate the LEGAL variable with anti-director rights index where larger values of the index indicate better protection of minority shareholders against expropriation by management and large shareholders, we find that the correlation to be -0.49 and statistically significant at the 0.01 level. We also correlate LEGAL with three separate legal enforcement variables of La Porta et al. (1998): efficiency of judiciary (EFFICIENCY) system, rule of law (LAW), and corruption (CORRUPTION), where larger values of each of these variables reflect stronger enforcement. The correlations between EFFICIENCY and LEGAL, between LAW and LEGAL, and between CORRUPTION and LEGAL are -0.41, -0.21, and -0.62, respectively. All three correlations are statistically significant at the 0.01 level. These correlations provide confidence on the construct validity of the LEGAL variable derived from the WBES database.

Firm level Factors:

$$\begin{aligned} \text{Prob (AUDIT =1)} = & \alpha + \beta_1 \text{ INVGR_RESID} + \beta_2 \text{ EXTDEP_RESID} + \\ & \beta_3 \text{ FOWN_RESID} + \beta_4 \text{ EXP_RESID} + \beta_5 \text{ SIZE_RESID} \\ & \beta_6 \text{ OWNERSHIP_RESID} + \beta_7 \text{ CONTROL_RESID} + \varepsilon \end{aligned} \quad (2)$$

Country-level factors:

$$\text{Prob (IAS=1)} = \alpha + \beta_1 \text{ LEGAL} + \beta_2 \text{ GFC} + \beta_3 \text{ CORR} + \beta_4 \text{ JUD} + \varepsilon \quad (3)$$

where all variables in both models are the same as defined above.

The models in equations (2) and (3) are estimated separately for two subsamples of countries partitioned by median GDP per capital of sample countries. The classification of a country's economic development as "high" (above median) or "low" (below median) is a proxy for the strength of institutions and the overall contracting environment in a particular country. Our choice of the level of economic development to partition the sample is driven by prior research. La Porta et al. (1998) argue that a country's overall wealth affects the quality of investor protection because it is costly to create and maintain legal enforcement mechanisms. In related work, Claessens and Laeven (2003) and Doidge et al. (2005) posit that a high level of economic development is associated with higher quality institutions in a country that facilitate private contracting. Hence, we use the median value of GDP to partition countries in the sample into "high" and "low" levels of economic development.¹⁰

The models in equations (2) and (3) generate an index value ranging from zero to one which is the probability of the observation having a voluntary audit based on the set of variables

¹⁰ Median GDP per capital is \$2,383, and countries in the HIGH GDP group are Argentina, Belize, Brazil, Canada, Chile, Colombia, Costa Rica, Croatia, Czech Rep, Ecuador, Estonia, France, Germany, Hungary, Italy, Lithuania, Malaysia, Mexico, Panama, Peru, Poland, Portugal, Russia, Singapore, Slovakia, Slovenia, Spain, Sweden, Thailand, Trinidad & Tobago, Turkey, United Kingdom, United States, Uruguay, and Venezuela. Countries in the LOW GDP group are Albania, Armenia, Azerbaijan, Bangladesh, Belarus, Bolivia, Bosnia, Bulgaria, Cambodia, China, Dominican Republic, El Salvador, Georgia, Guatemala, Haiti, Honduras, India, Indonesia, Kazakhstan, Moldova, Nicaragua, Pakistan, Philippines, Romania, Ukraine, Uzbekistan, and West Bank-Gaza.

included in each of the two models. The second-tier logit model estimates the relative weights of these two indexes by combining them in the following model:¹¹

$$\text{Prob (AUDIT =1)} = \beta_1 \text{LOW} + \beta_2 \text{HIGH} + \beta_3 \text{F}_{\text{Score_LOW}} + \beta_4 \text{F}_{\text{Score_HIGH}} + \beta_5 \text{C}_{\text{Score_LOW}} + \beta_6 \text{C}_{\text{Score_HIGH}} + \varepsilon \quad (4)$$

where:

F_{Score}	=	probability score from the firm-level factors model;
C_{Score}	=	probability score from the country-level factors model;
HIGH	=	1 if a firm observation is from a country with gross domestic product per capita (GDP) value above the sample median value of GDP per capita, and 0 otherwise;
LOW	=	1 if a firm observation is from a country with GDP value below the sample median value of GDP per capita, and 0 otherwise;
$\text{F}_{\text{Score-LOW}}$	=	$\text{F}_{\text{Score}} * \text{LOW}$;
$\text{F}_{\text{Score-HIGH}}$	=	$\text{F}_{\text{Score}} * \text{HIGH}$;
$\text{C}_{\text{Score-LOW}}$	=	$\text{C}_{\text{Score}} * \text{LOW}$;
$\text{C}_{\text{Score-HIGH}}$	=	$\text{C}_{\text{Score}} * \text{HIGH}$.

The two indexes, F_{Score} and C_{Score} , are scaled identically (0-1) which is the reason it is possible to interpret how a unit of probability from each index is weighted relative to the other index in explaining the incremental role of firm factors and country factors on the likelihood of having an audit, given that an observation comes from a “low” or “high” development country, respectively.

4.2 Measurement of Dependent Variable (AUDIT)

The dependent variable in the logit models is AUDIT and is coded 1 if a firm’s financial statements are reviewed by external auditor, and 0 otherwise¹² Given the existence of

¹¹ Because we use indicator variables for each of the classes of country-level variables, we drop the intercept term in the regression equations (see Neter et al. 1985; p. 353).

¹² The exact question is this: “Does your firm provide its shareholders with annual financial statements that have been reviewed by an external auditor?”

information asymmetries, and the potential for conflicts of interest between insiders and outside users of financial information, an audit of financial reports by a third party can enhance the quality of the financial information reported by management (Dopuch and Simunic 1982).

4.3 Firm-specific variables

We use six variables to proxy for contracting incentives based on data available in the WBES database. There is expected to be greater information asymmetry between the firm and outsiders and therefore a need for better governance structures (including auditing) for firms that have growth opportunities, external financing, foreign ownership, export sales, corporate ownership, and ownership concentration. Each of these variables is now explained in more detail.

We include the firm's expected growth in investments over the next three years (INVGR) as a measure of investment opportunities (and ex ante financing needs) and the firm's actual current external financing (EXTDEP) as proxies for external financing needs. Specifically, INVGR takes the value of one if a firm's expected growth in investment over the next three years is positive, and 0 otherwise. EXTDEP takes the value of 1 if the firm had external financing in the last year from equity, local commercial banks, and foreign banks, and 0 otherwise. We expect the coefficients on INVGR and EXTDEP to be positively related to having a voluntary audit, i.e., firms with growth opportunities and external financing needs are more likely to have audits to reduce information asymmetry and to facilitate external contracting.

We include an indicator variable (FOWN) that takes on the value of 1 if the nationality of some owners of a firm is different than the place of domicile of the firm, and 0 otherwise. Prior research indicates that institutional investors prefer high quality financial information when making international investments. For example, Leuz et al. (2005) show that foreign investment

is lower in firms that appear to manage earnings. Extending this line of reasoning, foreign owners will find it costly to be knowledgeable about a firm and therefore audited financial statements can alleviate this information asymmetry. The coefficient on the variable FOWN is expected to be positively associated with voluntary audits.

The adoption of governance practices can also depend on a firm's export activity. Data from different countries and periods show that exporters are more productive, larger, and more capital intensive than non-exporters.¹³ Exporters have more contracts with external parties so that audited financial statements are more important in reducing information asymmetry and facilitating contracting. Therefore, we include an indicator variable in our model to capture whether a firm is an exporting firm. Specifically, EXP takes the value of 1 if a firm is an exporting firm, and 0 otherwise. The coefficient on the variable EXP is expected to be positively associated with voluntary audits.

We also include an indicator variable in our regression model to control for the organizational form of a firm. Specifically, OWNERSHIP takes the value of 1 if a firm is organized as a partnership or proprietorship, and 0 otherwise. Because a partnership or proprietorship is a more closely held firm, there is less demand for strong corporate governance, so we expect the coefficient on the variable OWNERSHIP to be negatively associated with voluntary audits.

Prior research has argued that ownership concentration can avoid free rider problems in monitoring (Shleifer and Vishny 1986). There are several empirical findings consistent with the notion that larger shareholders play a more active role in corporate governance. For example, Franks and Mayer (1994) find that large shareholders of German companies are associated with

¹³ See for example; Bernard and Jensen (1999) for the US, Bernard and Wagner (2001) for Germany, Baldwin and Gu (2003) for Canada, and Castellani (2002) for Italy.

higher turnover of directors. Gorton and Schmidt (1996) document that block holdings by banks improve firm' performance. Kaplan and Minton (1994) find that Japanese companies with large shareholders are more likely to replace managers in response to poor performance than firms without them. Therefore, we include a variable CONTROL that measures the percentage of shares held by the top three stakeholders. The coefficient on CONTROL is expected to be positively associated with voluntary audits.

While firm size can proxy for many influences (Ball and Foster 1982), we include firm size because it may affect governance structures.¹⁴ Beck et al. (2005) argue that larger firms are more likely to depend on long-term financing and on larger loans than small firms. Hence, larger firms are more likely to adopt more stringent governance mechanisms to facilitate external financing. However, Doidge et al. (2005) note that large firms can face a greater cost of transparency. For example, large firms may benefit from connections to the political authorities which may lead them to seek less transparency to hide these benefits; alternatively, large firms are also more likely to be expropriated by the state (Zimmerman, 1983). Hence, we do not predict a sign on the coefficient of the SIZE variable. The variable SIZE in our model takes on the value of 1 if a firm employs less than 50 employees, 2 if it employs 51 to 500 employees, and 3 if it employs more than 500 employees.

In sum, we expect entities with more growth opportunities, a greater need for external financing, foreign ownership, larger export sales, a corporate ownership structure, and concentrated ownership are more likely to have a voluntary external audit in order to reduce information asymmetry and facilitate contracting with external parties.

4.4 Country-level factors

¹⁴ Durnev and Kim (2005) note that size also proxies for firm age; older and larger firms tend to have higher book-to-market value ratio.

We use five country-level variables in the analysis. The first variable LGDP is a proxy for a country wealth and its affect one overall quality of investor protection and the contracting environment. The remaining four variables, LEGAL, GFC, CORR, JUDD, are based on the mean values of the WBES survey respondents per country and reflect perceptions relating to the enforcement of court decisions, external financing obstacles, corruption, and the functioning of the judiciary, respectively.¹⁵ No directional signs are predicted for the set of country factors due to the competing arguments in Durnev and Kim (2005) and Doidge et al. (2005). Specifically, auditing could be in greater demand in weaker countries due to the substitution effect; alternatively, auditing could be in greater demand in stronger countries where the net payoffs of better governance structures are more likely to be positive.

5. Results

Descriptive Statistics

Table 1 reports mean statistics for AUDIT and GDP per capital for the 62 countries in the sample. The number of individual firms covered within a country range from 29 in Bangladesh to 252 in Cambodia. There is substantial within-country and across-country variation. For example, Azerbaijan has the lowest rate of voluntary audits (10 percent) and Sweden has the highest proportion with audits (97 percent). There is also considerable variation in GDP per capita which ranges from \$336 for Bangladesh to \$30,788 for Germany.

[Insert Table 1]

Table 2 presents firm-level descriptive statistics for the 5,082 observations in the study. For the entire sample, 58 percent of firms have an external audit. Eight-four percent of sample firms expect positive growth in investments over the next three years, and 45 percent of firms

¹⁵ While prior studies have relied on La Porta et al.'s (1998) measures of country variables, these variables are not available for most of the countries in our sample.

had external financing in the past year. Thirty-four percent of sample firms are exporters and 17 percent of the sample has one or more foreign owners. The median firm in our sample has 51 to 500 employees. Approximately 35 percent of observations are small firms (firms with less than 50 employees, another 42 percent are medium-sized firms (firms that employ 51 to 500 employees), and the remaining 23 percent are large firms (over 500 employees). Forty percent of firms are organized as a sole proprietorship or partnership, and the three largest stakeholders have an average ownership of 27.91 percent. Table 2 also reports GDP per capita. The mean (median) GDP per capita across all 62 countries is US \$4,957.30 (US \$2,383.06).

[Insert Table 2]

Panel B of Table 2 reports correlations among the variables used in this study. All firm-specific variables are associated with AUDIT in the expected direction (all are positive except OWNERSHIP which was expected to negative), and all are significant except CONTROL. This offers preliminary evidence that firm-specific contracting costs are positively related to the voluntary use of audits. The largest correlation among the set of firm-specific variables is -0.31 (SIZE and OWNERSHIP). Surprisingly, the correlation between AUDIT and LGDP is not significant.¹⁶ However, LGDP is negatively correlated with country-level institutional characteristics (LEGAL, GCF, CORR, and JUD), i.e., the smaller the level of economic development, the weaker the legal institutions and greater the obstacles in operating the business. AUDIT is also significantly correlated with GCF, GCORR and JUDS, but is not correlated with LEGAL.¹⁷ Finally, correlations among the four country-level variables are large and positive,

¹⁶ This is surprising since more audits are expected in countries with greater economic development. As a sensitivity analysis, we also examined the correlation between AUDIT and LGDP for the separate subsamples of observations from countries with high and low economic development partitioned at the sample median of GDP. In these two subsamples, there is a significant positive correlation between LGPD and AUDIT in each subsample.

¹⁷ When examining the separate subsamples of observations of countries with high and low economic development, LEGAL is significant and negatively associated with AUDIT in high development countries, and positively

ranging from 0.32 (LEGAL and GCF) to 0.75 (JUD and CORR). However, multicollinearity among the firm factors or country factors not a concern since the goal of the model estimations is to determine how much explanatory power the firm or country variables each have as a set.

Logistic Regression Models

Table 3 reports three weighted logistic regression models. Recall that we use weighted logistic regression (which weights each country equally) because the number of observations varies across countries, although we get comparable results using ordinary (unweighted) least squares. The models assess the importance of firm-specific incentives and country factors, alone and jointly, in explaining the firm's voluntary use of audits. All models are significant at $p < .01$, and initially we use Pseudo- R^2 and percentage of concordant pairs to compare the relative importance of firm-specific and country-level factors.

[Insert Table 3]

Model (1) in Table 3 uses firm-specific variables alone and is significant with a Pseudo- R^2 of 21 percent. The concordance measure, which is based on all possible pairwise combinations of firms, indicates that firm-specific factors correctly rank firms with audits higher than firms without audits 46.8 percent of the time. The coefficients on all firm-level variables are in the predicted direction and are statistically significant at the 0.01 level. These results indicate that firms with more growth opportunities, greater external financing needs, firms engaged in exporting, larger firms, and firms with more concentrated ownership are more likely to have voluntary audits, and that firms organized as sole proprietorships and partnerships are less likely to have audits than are corporate entities.

associated with AUDIT in low development countries. This is consistent with the argument that more audits voluntarily occur when institutions are stronger and the opposite when institutions are weaker.

In model (2), we investigate the role of country variables alone in explaining the voluntary use of auditing. The pseudo- R^2 of model (2) is nine percent and concordant pairs are 67.9 percent. If we treat models (1) and (2) as horse race between firm-specific incentives and country-level factors (the approach used by Doidge et al. (2005)), then the two models are difficult to distinguish. In terms of goodness of fit, model (1) has a higher pseudo- R^2 and higher likelihood ratio than model (2), but model (2) has a greater percentage of concordant pairs.

Model (3) combines all variables in models (1) and (2) in a joint estimation. All of the firm-specific variables that are statistically significant in model (1) or model (2) remain significant in model (3). Note also that the pseudo- R^2 for the combined model (3) is 24 percent which is higher than the 21 percent of model (1) which included only firm level variables, and the nine percent of model (2) which included only country indicator variables. In addition, concordant pairs in model (3) are greater than the other two models. Thus it appears that firm and country factors are both important in explaining the voluntary use of external audits, over and above the effects of either firm-specific or country factors alone. To formally verify this, F-statistics indicate that each set of firm-specific and country-level factors, as group, is significant at the 0.01 level in model (3), when the other set of factors is also included in the model.

In sum, the results in Table 3 indicate that a firm's voluntary use of auditing is explained by both firm-specific variables related to contracting incentives and more general country-level factors. However, in a horse race, it is difficult to determine from Table 3 if either firm-specific or country-level factors are more dominant.

Cascaded Logistic Regression Models

In order to formally evaluate the relative importance of firm-specific incentives and country factors in the voluntary use of audits in countries that are more (less) economically

developed, we partition countries into “high” and “low” levels of economic development based on median GDP per capita in the sample. The partition by GDP per capita is a proxy for countries with stronger versus weaker institutions that facilitate contracting, including the country’s legal system and enforcement of contracts. Panel A of Table 4 reports the results of first-tier cascaded logistic regressions models partitioned in countries with high and low levels of economic development. The first two columns present models using only firm-specific variables and the last two columns present models using only country-level factors. The primary purpose of these first-tier models is to provide firm and country indices (probability scores) for use in the second-tier cascaded logistic regression models that are reported in Panel B; however, the results in Panel A can also be interpreted in their own right.

[Insert Table 4]

Several findings are noteworthy in Panel A of Table 4. First, the firm-specific variables that are significant in the simple logit model in Table 3 (model 3) are also generally significant in the first-tier models in Table 4 for both groups of countries. There are just two exceptions: INVGR is not significant in countries with high development; and CONTROL is not significant in countries with low economic development. Second, country factors are comparably significant in Table 4 as they were in Table 3. As in Table 3, GCF and GCORR are significant, and JUDS is not significant. LEGAL was insignificant in Table 3, but is significant in countries with high economic development. In the more highly developed countries, the country-level model has a Pseudo-R² of nine percent and concordant pairs are 63.9 percent, while the firm-level model has a Pseudo-R² of 21 percent and concordant pairs 78 percent. These statistics indicate that firm incentives dominate country effects in more highly developed economies. Similar results obtain for the less developed countries, i.e., the firm-level factors dominate country-level

factors. Thus in a simple horse race test, firm-specific incentives appear to dominate country-level factors in explaining voluntary audits in both groups of countries.

The second-tier logit results are reported in Panel B of Table 4 and these models formally analyze the relative incremental weighting of firm-specific and country-level factors across the partition of countries into high and low levels of economic development. The model in column (1) reports firm-scores alone; the model in column (2) reports country-scores alone; and the model in column (3) combines both firm-scores and country-scores. In column (1), the coefficient on $F_{\text{score_HIGH}}$ is greater than the coefficient on $F_{\text{score_LOW}}$ and the difference is statistically significant at the 0.01 level, indicating that firm-specific factors (alone) have relatively more weight on the likelihood of a voluntary audit in more highly developed countries than in less developed countries. In column (2), the coefficient on $C_{\text{score_HIGH}}$ is not significantly different from the coefficient on $C_{\text{score_LOW}}$, indicating country factors (alone) have equal weight on the likelihood of a voluntary audit across both groups of countries.

The key analysis is column (3) which reports the model specified in equation (4) wherein both F_{score} and C_{score} are introduced into the model together to evaluate their relative importance. Consistent with the results in columns (1) and (2), the parameter estimates reveal that more weight is given to firm factors in high development countries (5.0621) than in low development countries (4.3082), and this difference is statistically significant (F-statistic is 4.94, $p < .05$). The combined parameter estimates also indicate that country factors are weighted more heavily in explaining audits in less developed countries (4.2719) than in more economically developed countries (2.8897), and again this difference is statistically significant (F-statistic is 6.40, $p < .05$). Together these two results suggest that country-level factors are relatively more important in explaining audits in less developed countries with weaker institutions than they are in more

developed countries with stronger institutions, while the opposite is the case for firm-specific incentives. Since audit rates are lower in less developed economies (41 percent) than in more developed economies (63 percent), these results are consistent with the idea that net payoffs from voluntarily better governance are affected by country-level conditions, with private incentives playing a relative more important role in those countries with stronger institutions.

The most important result in model (3) is that the relative weighting for firm-specific incentives is greater than for country-level factors in countries with high levels of economic development. Specifically, the parameter estimate for firm-specific incentives is greater than that for country factors. The difference (5.0621 versus 2.8897) is statistically significant at the 0.01 level. The magnitudes of these coefficients measure the relative weighting of country versus firm factors, and indicate that firm-specific incentives are weighted approximately 75 percent more than are the country-level factors in column (3), i.e., 5.0621 minus 2.8897, divided by 2.8897. In contrast, in countries with low economic development, the weightings of the parameter estimates for firm and country factors are not significantly different from one another (4.3082 versus 4.2719).

Thus the evidence from voluntary audits in the WBES database is generally supportive of the argument in Doidge et al. (2005) that firm-specific incentives become more important and dominate country-level factors in countries with stronger institutions, as proxied by level of economic development in our study. This finding is consistent with the conjecture in Doidge et al. (2005) that the net payoff from voluntarily adopting better governance is greater when a country has stronger enabling institutions. In contrast, there is no evidence to support the argument in Durnev and Kim (2005) that stronger governance is more likely to occur as a substitute governance mechanism in less developed countries that have weaker institutions.

An Additional Control for Endogeneity

There is a potential problem with the approach taken in Tables 3 and 4 because firm-level variables that measure firm-specific incentives for audits could potentially be affected by country-level characteristics. For example, a country's legal environment and level of economic development may affect a firm's growth prospects, its external financial needs and export potential, and even a firm's size and ownership structure. To address this potential endogeneity problem, we re-estimate the models in Table 4 as follows. We remove the potential effects of country endogeneity on firm-level variables by regressing each firm-level variable on a set of country indicator variables. We then use the residuals from this first stage estimation to derive a measure of firm-level effects that is orthogonal to country factors. Note also that a set of country indicator (dummy) variables is used rather than the specific country variables in Tables 3 and 4. The reason for this is based on the analysis in Doidge et al. (2005) who find that the adjusted R^2 of a model regressing a firm's governance-transparency ratings on a set of country indicator variables is about two and a half times larger than the adjusted R^2 of a model using specific country-level variables (GDP per capita, investor protection, and the ratio of stock market capitalization to GDP). They suggest this result is due to the fact that specific country-level characteristics capture only a fraction of the variation in institutions across countries. Following Doidge et al. (2005), we use country indicator variables in lieu of specific variables in order to capture a statistical upper-bound on the importance of country characteristics in the governance structure of firms within a country.

In some respects, this approach is stacked against finding results for firm-specific variables. However, when we re-estimate model 3 in Table 3 using this approach, we continue to find that firm-specific variables are individually significant in explaining voluntary audits. In

addition, we find that the set of firm-specific variables are significant as a group over and above the effect of country factors, and vice-versa. Thus in this alternative estimation, both firm-specific incentives and country-level factors are independently significant in explaining voluntary audits, just as was reported in the model estimations in Table 3.

We also re-estimate the models in Panel A of Table 4 using this approach and find that the firm-specific variables are significantly associated with voluntary audits in all but two cases: the residual of INVGR is not significant in the sample of high development countries, and the residual of EXP is not significant in the sample of low development countries. Finally, we re-estimate the model in column (3) of Panel B in Table 4. The individual firm-scores and country-scores are all significant in the combined model, indicating again that both firm-level and country-level factors explain voluntary audits. However, unlike Table 4, there is no significance difference in the relative weighting of firm and country factors, in either high development countries or low development countries. Overall, though, we conclude that the primary results reported in Tables 3 and 4 are robust to the possibility that firm-level variables partially capture endogenous country effects.

Controlling for the Voluntary Use of International Accounting Standards

In addition to information about audits, the WBES database also includes information on the voluntary use of international accounting standards (IAS) by the firms that were surveyed. This raises the question of whether the results in Tables 3 and 4 might really be driven by the adoption of IAS rather than the voluntary use of auditing. It turns out that 69 percent of the sample uses IAS even though the WBES data (circa 2000) predates the mandatory adoption of international accounting standards by the EU and other countries. It could be that higher quality

accounting through the use of IAS drives the empirical results in our study rather than the voluntary use of auditing. In other words, there may be a classic correlated omitted variable.

To clarify this issue we reanalyze the data as follows. We limit the analysis to the subset of those sample firms that voluntarily use IAS (n=3,516), and then re-examine the role of firm and country factors in explaining the voluntary use of auditing for this restricted sample. Table 5 reports the result of this analysis which mirrors the results reported in Table 4 for the full sample. Panel A of Table 5 reports the first-tier logit models for the sample partitioned into countries with high versus low economic development, while Panel B of Table 5 reports the second-tier logit models.

[Insert Table 5 Here]

Panel A of Table 5 shows that both firm factors and country factors are important in explaining the voluntary use of auditing by firms that also use international accounting standards. However, unlike Table 4, the horse race tests based on Pseudo-R² and concordant pairs indicate that firm-level factors are relatively more important than country factors for both groups of countries. The formal analysis of the relative weights is reported in Panel B of Table 5. It turns out there is no statistical difference in the relative weighting of firm-level and country-level factors in either group of countries partitioned by level of economic development. In other words, both firm and country factors are equally important in explaining the rate of voluntary audits. While this result is different from Table 4 in which firm factors dominated country factors in countries with high economic development, the more important point is that there is no evidence our primary results are confounded by voluntary IAS adoption. That is, firm-specific incentives still explain voluntary audits, over and above the variance explained by country-level factors.

Additional Control for Nonvoluntary Audits

The European Union's Fourth and Seventh Directives require private limited liability companies in the EU to be audited (see Buijink et al. 1996), although there are exclusions for smaller companies. There is not sufficient information in the WBES database to determine if some of the larger private limited liability companies from EU countries in our sample might be required to have an audit. A similar concern exists with respect to private limited liability companies in China, some of which are required to have an annual audit in order to receive a business operating license from the government.¹⁸ Therefore, to assure that we have not inadvertently included in our sample some entities that are required by law to have an audit, we drop all EU (n=446) and China (n=63) observations and re-estimate the models in Tables 3 and 4. The results in Tables 3 and 4 are qualitatively unaffected by these exclusions and so the results on our study are robust to either the inclusion or exclusion of observations from the EU and China.

6. Discussion and Conclusion

Recent research has emphasized the role of accounting and auditing as part of a firm's overall governance structure. An important question that emerges from this line of inquiry is what the factors are that contribute to variation in firm-level governance decisions. Our paper pursues this research question by examining the firm's voluntary use of external auditing as a stricter governance mechanism. Prior research shows that an external audit can increase the reliability and credibility of financial statements and consequently serves to monitor firm performance and reduce information asymmetry.

Recent research argues that both firm-specific factors and country-level characteristics influence net payoffs from the voluntary adoption of better governance structures. As expected,

¹⁸ We thank Professor Charles J.P. Chen, City University of Hong Kong, for bringing this to our attention.

we find that both firm-specific and country-level factors are significant in explaining the voluntary auditing. Importantly, firm-specific incentives affect the voluntary demand for audits irrespective of whether a country is more economically developed, or less economically developed. Further, we find that firm-specific factors are weighted relatively more heavily than country factors in countries with a greater level of economic development, while firm and country factors are of equal importance in less developed countries.

What are the implications of our findings? A number of studies conclude that governance structures are largely endogenous, and therefore mandating auditing or higher quality accounting is unlikely to be successful if countries lack the enabling institutions to make better governance structures cost-effective (e.g., Ball 2001; Francis et al. 2003; Leuz et al. 2005). However, this conclusion and policy implication is based on studies of publicly-listed companies that are subject to regulated accounting and auditing and which complicates the analysis of the underlying economic incentives. The importance of our study is that we provide evidence on this question using a sample of private entities that are subject to little or no regulation with respect to accounting and auditing, and therefore which provides a cleaner test of the underlying economic incentives that influence a firm's governance decisions. The predominant Anglo-American world view is that contracting costs and information asymmetry determine a firm's governance structure, and we find evidence that this is the case around the world with respect to voluntary auditing. However, our study also provides evidence that governance structures are to some extent endogenous to broader country-level institutions and that firm-specific incentives do not entirely explain variation in governance structures.

The take-away message is this. The contracting incentives of private companies affect their governance choices, even after controlling for endogenous country factors. Further, the

evidence in our study of private companies is that mandated governance “improvements” are not necessarily going to be cost-effective without considering the country-specific context and the existence of complementary institutions that support contracting and governance structures. Consistent with this idea is the fact that the audit rate is 63 per cent in countries that are more economically developed (a proxy for institutional development), while the audit rate is only 41 percent in those countries that are less developed. In other words, the audit rate increases as the endogenous contracting environment improves. This also helps to explain why firm-specific incentives are relatively more important in developed economies where the economic benefits of auditing are likely to be greater.

Our study also has something to say about the consequence of mandated auditing for private entities. Recall that larger limited liability companies in EU countries and China are required to have an audit. In our sample of limited liability companies from the EU and China, the audit rate is 93 percent. In contrast, the audit rate for limited liability entities in the sample of more developed countries is only 69 percent. We suggest that this difference, 93 percent minus 69 percent, or 24 per cent, is the amount of auditing induced by the regulatory requirement. So it is possible as many as 24 percent of limited liability entities the EU and China are forced to have an audit that they would not otherwise have, all things being equal. Thus our analysis can help in current deliberations on the accounting and financial reporting needs of small and medium-sized enterprises.¹⁹ Specifically, this kind of analysis in our study can provide insights on the

¹⁹ Specifically, the International Accounting Standards Board (IASB 2004) is working on a project to develop accounting standards suitable for entities that in many countries are known as small and medium-sized entities (SMEs). For additional background see Tyler (2005) who specifically discusses implications for auditing. SMEs are entities that (1) do not have public accountability and (2) publish general purpose financial statements for external users (including existing and potential creditors). Under this project, an entity has public accountability if (1) it has filed, or it is in the process of filing, its financial statements with a securities commission or other regulatory organization for the purpose of issuing any class of instruments in a public market; or (2) it holds assets in a fiduciary capacity for a broad group of outsiders, such as a bank, insurance company, securities broker/dealer, pension fund, mutual fund or investment banking entity; or (3) it is a public utility or similar entity that provides an

underlying economic incentives for better quality governance structures and the kinds of enabling country-level institutions that are necessary to produce a net positive payoff for private entities from the mandatory adoption of better governance through accounting and auditing requirements. Finally, we know of at least one EU country, Denmark, that is currently re-examining its mandatory audit requirement and considering the exemption of smaller private entities (Danish Commerce and Companies Agency 2005). Our evidence suggests that such a decision would be justified: small private entities which have a need for an audit are likely to respond to market forces by having one, while those entities with small agency and/or contracting costs are not likely to do so.

essential public service; or (4) it is economically significant in its home country on the basis of criteria such as total assets, total income, number of employees, degree of market dominance, and nature and extent of external borrowings.

References

- Baldwin, J. and W. Gu. 2003. Export-Market Participation and Productivity Performance in Canadian Manufacturing. *Canadian Journal of Economics* 36(3):634-657.
- Ball, R. 2001. Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. Brookings-Wharton Papers on Financial Services, Brookings Institution Press, 127-169.
- Ball, R., S. Kothari, and A. Robin. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics* 29 (February): 1-51.
- Ball, R., A. Robin, and J. Wu. 2003. Incentives versus standards: properties of accounting Income in four east Asian countries and implications for acceptance of IAS. *Journal of Accounting and Economics* 36: 235-270.
- Ball, R., and G. Foster. 1982. Corporate financial reporting: a methodological review of empirical research. *Journal of Accounting Research* 10: 161-234.
- Ball, R., and L. Shivakumar. 2005. Earnings quality in private UK firms. *Journal of Accounting and Economics*. 39 (February): 83-128.
- Batra, G., D. Kaufmann and A. Stone. 2003. The firms speak: What the world business environment survey tells us about constraints on private sector development. Working paper, World Bank.
- Beck, T., A. Demirgüç-Kunt, and R. Levine 2004a. Bank supervision and corruption in lending. NBER Working paper.
- Beck, T., A. Demirgüç-Kunt, and R. Levine 2004b. Law and firm's access to finance. NBER Working paper.
- Beck, T., A. Demirgüç-Kunt, and V. Maksimovic. 2005. Financial and legal constraints to firm growth: Does size matter? *The Journal of Finance* 137-177.
- Bell, T., S. Szykowny, and J. Willingham. 1991. Assessing the likelihood of fraudulent financial reporting: a cascaded logit approach. KPMG: Unpublished paper.
- Bernard, A. and J. Jensen. 1999. Exceptional Exporter Performance: Cause, Effect, or Both? *Journal of International Economics* 47(1): 1-25.
- Bernard, A. and J. Wagner. 2001. Export Entry and Exit by German Firms. *Weltwirtschaftliches Archiv* 137(1): 105-23.

- Buijink, W., S. Maijor, R. Meuwissne, and A. Witteloostuijn. 1966. *Final Report of a Study on the Role, Position and Liability of the Statutory Auditor Within the European Union*. Luxembourg: Office for Official Publications of the European Communities.
- Castellani, D. 2002. Export Behavior and Productivity Growth: Evidence from Italian Manufacturing Firms. *Weltwirtschaftliches Archiv* 138(4): 605-28.
- Chow, C., 1983. The Demand for External Auditing: Size, Debt and Ownership Influences. *The Accounting Review* 272-291.
- Claessens, S., and L. Laeven. 2003. Financial development, property rights, and growth. *The Journal of Finance* 58: 2401-2436.
- Danish Commerce and Companies Agency. 2005. Report on the Auditing Requirement for B Enterprises (Smaller Companies). English-Language Summary.
- Doidge, C., A. Karolyi, and R. Stulz. 2005. Why do countries matter so much for corporate governance? NBER working paper.
- Dopuch, N., and D. Simunic. 1982. Competition in auditing research: An assessment. *Fourth Symposium on Auditing Research*. (University of Illinois): 403-450.
- Durnev, A. and E. Kim. 2005. To steal or not to steal: firm attributes, legal environment, and valuation. *The Journal of Finance* 60(3): 1461-1493.
- Fan, J., and T.J. Wong. 2005. "Do External Auditors Perform a Corporate Governance Role in Emerging Markets? Evidence from East Asia." *Journal of Accounting Research* 43 (1): 35-72.
- Francis, J., I. Khurana, and R. Pereira. 2003. The role of accounting and auditing in corporate governance and the development of financial markets around the world. *Asia Pacific Journal of Accounting and Economics* 10: 1-31.
- Franks, J., and C. Mayer, 1994. The ownership and control of German corporations. Working paper, London Business School.
- Gorton, G., and F. Schmidt, Universal Banking and The Performance of German Firms. University of Pennsylvania (October 1996).
- Hubbard, R., 1998. Capital-market imperfections and investment. *Journal of Economic Literature* 36: 193-225.
- International Accounting Norms (IAN). Background and recent developments in EU. Retrieved March 8, 2005, from <http://forum.europa.eu.int/irc/dsis/acstat/info/data/en/accounting%20for%20website.htm#European%20Accounting%20Directives%20until%202000>

- International Accounting Standards Board (IASB). 2004. Preliminary Views on Accounting Standards for Small and Medium Sized Enterprises: Discussion paper.
- International Monetary Fund (IMF). 2003. *International Financial Statistics*. Washington DC: International Monetary Fund.
- Jensen, M. C., and W. H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* (October 1976), pp. 305-360.
- Kaplan S., and B. Minton, 1994, Appointment of outsiders to Japanese Boards, determinants and implications for managers, *Journal of Financial Economics* 36: 225-258.
- Kothari, S., 2001. The role of financial reporting in reducing financial risks in the market. In *Building an Infrastructure for Financial Stability*, edited by E. Rosengren and J. Jordan. Federal Reserve Bank of Boston, 89-102.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1998. Law and Finance. *Journal of Political Economy* 106 (December): 1113-1155.
- Leuz, C., 2001. Discussion: Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. Brookings-Wharton Papers on Financial Services, Brookings Institution Press, 170-178.
- Leuz, C., K. Lins, and F. Wanock, 2005, Do foreigners invest less in poorly governed firms? *Working paper*, The Wharton School, University of Pennsylvania
- Neter, J., W. Wasserman , and M. Kutner. 1985. *Applied Linear Statistical Models*. Chicago, IL: Irwin.
- Reese, W., and M. Weisbach. 2003. Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics* 66: 65-104.
- Shleifer, A., and R. Vishny. 1986. Large shareholders and corporate control. *Journal of Political Economy* 94: 461-488.
- Summers, S., and J. Sweeney. 1998. Fraudulently misstated financial statements and insider trading: an empirical analysis. *The Accounting Review* 73(1): 131-146.
- Tyler, J. 2005. Addressing the needs of small and medium practices (SMP) in the development of pronouncements of the International Auditing and Assurance Standards Board (IAASB). A paper presented at the 2005 IFAC SMP/SME and Developing Nations Consultative Conference (Prague, March 2005).
- Watts, R., J. Zimmerman. "Agency Problems, Auditing, and the Theory of the Firm: Some Evidence." *Journal of Law and Economics* 26 (October 1983): 613-634.

World Bank, 2002, SME. World Bank Group Review of Small Business Activities. Washington, DC: World Bank.

Zimmerman, J., 1983. Taxes and firm size. *Journal of Accounting and Economics* 5: 119-149.

Table1
Mean Statistics of AUDIT and Country Variables
For Sample of 62 Countries

COUNTRY	N	AUDIT	GDP
ALBANIA	101	0.58	831.59
ARGENTINA	80	0.75	7990.43
ARMENIA	87	0.14	992.06
AZERBAIJAN	48	0.10	340.82
BANGLADESH	29	0.93	336.59
BELARUS	66	0.42	1187.17
BELIZE	31	0.65	2893.20
BOLIVIA	82	0.79	940.27
BOSNIA	84	0.57	1166.03
BRAZIL	55	0.75	4488.50
BULGARIA	95	0.36	1438.89
CAMBODIA	252	0.21	282.78
CANADA	51	0.65	20730.95
CHILE	87	0.85	5002.70
CHINA	63	0.40	676.84
COLOMBIA	77	0.87	2383.06
COSTA RICA	74	0.82	3581.39
CROATIA	77	0.86	4629.96
CZECH REP	63	0.22	5186.87
DOMINICAN REPUBLIC	97	0.90	1741.32
ECUADOR	66	0.59	17150.89
EL SALVADOR	88	0.93	1706.62
ESTONIA	117	0.36	3818.21
FRANCE	60	0.88	27773.54
GEORGIA	88	0.42	422.38
GERMANY	44	0.32	30787.68
GUATEMALA	84	0.60	1503.87
HAITI	60	0.35	369.01
HONDURAS	51	0.73	712.44
HUNGARY	84	0.64	4702.61
INDIA	73	0.95	415.76
INDONESIA	61	0.56	1055.31
ITALY	68	0.69	19698.14
KAZAKHSTAN	65	0.25	1284.18
LITHUANIA	54	0.11	2055.78

Table1 (Continued)
Mean Statistics of AUDIT and Country Variables
For Sample of 62 Countries

COUNTRY	N	AUDIT	GDP
MALAYSIA	40	0.58	4539.25
MEXICO	80	0.81	3395.44
MOLDOVA	49	0.27	667.74
NICARAGUA	74	0.65	426.71
PAKISTAN	60	0.48	502.19
PANAMA	76	0.92	3579.17
PERU	90	0.78	2301.80
PHILIPPINES	73	0.77	1122.93
POLAND	177	0.54	3215.96
PORTUGAL	65	0.83	11639.25
ROMANIA	81	0.22	1529.94
RUSSIA	250	0.37	2221.67
SINGAPORE	52	0.94	25136.03
SLOVAKIA	94	0.31	3925.11
SLOVENIA	93	0.65	10232.73
SPAIN	86	0.71	15778.97
SWEDEN	66	0.97	28387.58
THAILAND	245	0.80	2835.72
TRINIDAD&TOBAGO	83	0.67	4558.38
TURKEY	115	0.45	2927.43
UNITED KINGDOM	57	0.67	20576.12
UNITED STATES	43	0.58	29273.22
UKRAINE	92	0.30	867.30
URUGUAY	69	0.58	6439.93
UZBEKISTAN	84	0.37	461.70
VENEZUELA	82	0.94	3482.51
WEST BANK-GAZA	44	0.59	1498.90

Variable definitions:

AUDIT = 1 if a firm's financial statements are reviewed by external auditor, 0 otherwise;

GDP = Purchasing power-adjusted Gross Domestic Product per capita (in US. Dollars) averaged over 1995 – 1999.

Table 2
Descriptive Statistics and Correlations

Panel A Descriptive statistics (N = 5082)

Variable	Mean	Stdev.	Quartile1	Median	Quartile3
AUDIT	0.58	0.49	0.00	1.00	1.00
INVGR	0.84	0.37	1.00	1.00	1.00
SIZE	1.73	0.72	1.00	2.00	2.00
EXTDEP	0.45	0.49	0.00	0.00	1.00
FOWN	0.17	0.38	0.00	0.00	0.00
EXP	0.34	0.47	0.00	0.00	1.00
OWNERSHIP	0.40	0.49	0.00	0.00	1.00
CONTROL	27.91	40.59	0.00	2.00	70.00
GDP	4957.30	7062.05	992.06	2383.06	4558.38
LEGAL	3.65	0.59	3.34	3.74	4.16
GCF	2.79	0.43	2.52	2.84	3.18
GCORR	2.52	0.58	1.97	2.17	2.45
JUDS	2.14	0.37	2.04	2.59	2.91

Panel B Correlations (N = 5082)

Variable	AUDIT	INVGR	SIZE	EXTDEP	FOWN	EXP	OWNERSHIP	CONTROL	LGDP	LEGAL	GCF	GCORR
INVGR	0.10***											
SIZE	0.34***	0.07***										
EXTDEP	0.18***	0.04***	0.17***									
FOWN	0.24***	0.06***	0.26***	0.08***								
EXP	0.19***	0.09***	0.28***	0.15***	0.22***							
OWNERSHIP	-0.35***	-0.04***	-0.31***	-0.08***	-0.11***	-0.13***						
CONTROL	0.26	0.04***	0.13***	0.16***	0.17***	0.07***	-0.17***					
LGDP	0.20	0.06***	0.10***	0.20***	0.03**	0.13***	-0.19***	0.12***				
LEGAL	-0.02	-0.01	0.02	-0.07***	-0.04***	-0.13***	0.06***	0.01	-0.33***			
GCF	-0.11***	0.02*	-0.02	-0.09***	-0.06***	-0.05***	-0.01	0.11***	-0.28***	0.32***		
GCORR	0.05***	0.03*	0.06***	-0.05***	0.03***	-0.06***	0.03*	0.02	-0.57***	0.54***	0.55***	
JUDS	0.09***	0.01	0.13***	0.01	0.02	0.01	0.02	0.02	-0.18***	0.55***	0.34***	0.75***

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

Table 2 (Continued)

Variable definitions:

AUDIT	=	1 if a firm's financial statements are reviewed by external auditor, 0 otherwise;
INVGR	=	1 if growth in investment over the future three years is positive, 0 otherwise;
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;
EXTDEP	=	1 if firm's financing over the last year coming from Equity, local commercial banks and foreign banks, 0 otherwise.
FOWN	=	1 if the nationality of some owners is different than the place of domicile of the firm, 0 otherwise;
EXP	=	1 if firm has export sales, 0 otherwise;
OWNERSHIP	=	1 if a firm is organized in the form of partnership and sole proprietorship, 0 otherwise;
CONTROL	=	Percentage shares that the top three stakeholders hold;
LGDP	=	Natural logarithm of purchasing power-adjusted Gross Domestic Product per capital (in US. Dollars) averaged over 1995 – 1999;
LEGAL	=	Legal development, 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 to be decisions enforced?' The responses take values between 1 to 6: where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6 never;
GCF	=	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;
GCORR	=	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;
JUDS	=	General legal constraint, 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;

Table 3
Full Sample Logit Estimations
(AUDIT is the dependent variable)

$$\text{Prob (AUDIT=1)} = \alpha + \beta_1 \text{ INVGR} + \beta_2 \text{ SIZE} + \beta_3 \text{ EXTDEP} + \beta_4 \text{ FOWN} + \beta_5 \text{ EXP} \\ + \beta_6 \text{ OWNERSHIP} + \beta_7 \text{ CONTROL} + \beta_8 \text{ LGDP} + \beta_9 \text{ LEGAL} \\ + \beta_{10} \text{ GCF} + \beta_{11} \text{ GCORR} + \beta_{12} \text{ JUDS} + \varepsilon$$

Variable	Parameter Estimates		
	(Wald Chi-square statistics)		
	(1)	(2)	(3)
Intercept	-1.1963 (79.98)***	-1.0623 (4.35)**	-1.1812 (10.16)***
INVGR	0.4237 (23.52)***		0.2949 (9.94)***
SIZE	0.6644 (165.24)***		0.6052 (122.09)***
EXTDEP	0.5344 (65.57)***		0.2945 (17.54)***
FOWN	1.1485 (115.19)***		1.0933 (90.88)***
EXP	0.2803 (14.67)***		0.2578 (11.16)***
OWNERSHIP	-1.1843 (315.08)***		-1.1271 (249.97)***
CONTROL	0.0926 (1.74)		0.1916 (6.67)***
LGDP		0.3669 (92.98)***	0.2636 (40.39)***
LEGAL		-0.0661 (1.13)	0.0273 (0.15)
GCF		-1.4306 (199.05)***	-1.3164 (138.63)***
GCORR		1.2285 (126.62)***	1.1092 (72.56)***
JUDS		-0.0881 (0.42)	-0.0379 (0.06)
Pseudo R ²	0.21	0.09	0.24
Model significance	0.01	0.01	0.01
Likelihood ratio	1251.29	478.68	1332.62
Concordant pairs	46.80%	67.90%	79.30%
N	5082	5082	5082

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

Variable definition:

- AUDIT = 1 if a firm's financial statements are reviewed by an external auditor, 0 otherwise;
 INVGR = 1 if expected growth in investment over the next three years is positive, 0 otherwise;
 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;
 EXTDEP = 1 if firm's financing over the last year coming from Equity, local commercial banks and foreign banks, 0 otherwise;

Table 3 (continued)

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, 0 otherwise;
OWNERSHIP CONTROL	=	1 if a firm is organized in the form of partnership and sole proprietary, 0 otherwise.
LGDP	=	Percentage shares that the top three stakeholders hold;
LEGAL	=	Natural logarithm of purchasing power-adjusted Gross Domestic Product per capital (in US. Dollars) averaged over 1995 – 1999;
	=	Legal development, 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 to be decisions enforced?’ The responses take values between 1 to 6: where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6 never;
GCF	=	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;
GCORR	=	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;
JUDS	=	General legal constraint, 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;

Table 4
Logit Estimations for Countries Partitioned by Median GDP (per capita)
into High and Low Levels of Economic Development
(AUDIT is the dependent variable)

Panel A: First-tier logit models

Firm level factors:

$$\text{Prob (AUDIT=1)} = \alpha + \beta_1 \text{ INVGR} + \beta_2 \text{ SIZE} + \beta_3 \text{ EXTDEP} + \beta_4 \text{ FOWN} + \beta_5 \text{ EXP} + \beta_6 \text{ OWNERSHIP} + \beta_7 \text{ CONTROL} + \varepsilon$$

Country-level factors:

$$\text{Prob (AUDIT=1)} = \alpha + \beta_1 \text{ LEGAL} + \beta_2 \text{ GCF} + \beta_3 \text{ GCORR} + \beta_4 \text{ JUDS} + \varepsilon$$

Variable	Parameter Estimates (Wald Chi-square statistics)			
	Firm Level Factors		Country Level Factors	
	Economic Development		Economic Development	
	high	low	high	low
Intercept	-0.8334 (19.18)***	-1.6968 (66.61)***	3.4002 (102.58)***	0.5525 (0.71)
INVGR	0.0587 (0.23)	0.8111 (34.63)***		
SIZE	0.6033 (72.50)***	0.4835 (31.54)***		
EXTDEP	0.3767 (18.47)***	0.5633 (25.87)***		
FOWN	1.3776 (75.61)***	1.0965 (48.73)***		
EXP	0.1758 (3.41)*	0.2237 (3.31)*		
OWNERSHIP	-1.1661 (167.93)***	-1.0059 (88.68)***		
CONTROL	0.1992 (4.07)**	0.0243 (0.04)		
LEGAL			-0.3091 (11.73)***	0.1024 (1.41)
GCF			-1.4947 (139.76)***	-1.4081 (55.53)***
GCORR			0.9221 (61.59)***	0.9362 (22.27)***
JUDS			0.1199 (0.56)	0.3316 (2.05)
Pseudo R ²	0.21	0.21	0.06	0.09
Model significance	0.01	0.01	0.01	0.01
Likelihood ratio	705.41	473.14	186.03	171.71
Concordant pairs	78.00%	77.00%	63.90%	66.90%
N	3048	2034	3048	2034

Table 4 (continued)**Panel B: Second-tier logit model**

$$\text{Prob (AUDIT = 1)} = \alpha + \beta_1\text{LOW} + \beta_2\text{HIGH} + \beta_3\text{F}_{\text{score-LOW}} + \beta_4\text{F}_{\text{score-HIGH}} + \beta_5\text{C}_{\text{score-LOW}} + \beta_6\text{C}_{\text{score-HIGH}} + \varepsilon$$

Variable	Parameter Estimates (Wald Chi-square statistics)		
	(1)	(2)	(3)
LOW	-2.1544 (311.58)***	-2.2171 (160.13)***	-4.2414 (336.45)***
HIGH	-2.6136 (341.96)***	-1.9374 (66.71)***	-4.3759 (211.08)***
F _{score-LOW}	4.4309 (359.58)***		4.3082 (291.53)***
F _{score-HIGH}	5.2511 (569.72)***		5.0621 (500.45)***
C _{score-LOW}		4.4013 (179.55)***	4.2719 (147.91)***
C _{score-HIGH}		4.0425 (124.35)***	2.8897 (47.68)***
F statistic: F _{score-LOW} = F _{score-HIGH}	6.53**		4.94**
F statistic: C _{score-LOW} = C _{score-HIGH}		0.54	6.40**
F statistic: F _{score-LOW} = C _{score-LOW}			0.92
F statistic: F _{score-HIGH} = C _{score-HIGH}			20.05***
Pseudo R ²	0.26	0.13	0.31
Model significance	0.01	0.01	0.01
Likelihood ratio	1480.69	654.26	1563.61
Concordant pairs	78.90%	67.90%	80.10%
N	5082	5082	5082

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

Variable definition:

AUDIT	=	1 if a firm's financial statements are reviewed by an external auditor, 0 otherwise;
INVGR	=	1 if growth in investment over the future three years is positive, 0 otherwise;
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;
EXTDEP	=	1 if firm's financing over the last year coming from Equity, local commercial banks and foreign banks, 0 otherwise;
FOWN	=	1 if the nationality of some owners is different than the place of domicile of the firm, 0 otherwise;
EXP	=	1 if firm has export sales, 0 otherwise;
OWNERSHIP	=	1 if a firm is organized in the form of partnership and sole proprietary, 0 otherwise;
CONTROL	=	Percentage shares that the top three stakeholders hold;
LEGAL	=	Legal development, 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 to be decisions enforced?' The responses take values between 1 to 6; where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6 never;

Table 4 (continued)

GCF	=	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;
GCORR	=	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;
JUDS	=	General legal constraint, 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;
F _{Score}	=	score from the Firm-level factors model;
C _{Score}	=	score from the Country-level factors model;
LGDP	=	Natural logarithm of purchasing power-adjusted Gross Domestic Product (in US. Dollars) averaged over 1995 – 1999;
HIGH	=	1 if a firm observation is from a country with gross domestic product per capita (GDP) value above the sample median value of GDP per capita, and 0 otherwise;
LOW	=	1 if a firm observation is from a country with GDP value below the sample median value of GDP and 0 otherwise;
F _{Score} -LOW	=	F _{Score} * LOW;
F _{Score} -HIGH	=	F _{Score} * HIGH;
C _{Score} -LOW	=	C _{Score} * LOW;
C _{Score} -HIGH	=	C _{Score} * HIGH.

Table 5
Logit Estimations for Subsample Using International Accounting Standards
(AUDIT conditioned on IAS adoption is the dependent variable)

Panel A: First-tier logit models

Firm level factors:

$$P(\text{AUDIT} = 1 \mid \text{IAS} = 1) = \alpha + \beta_1 \text{INVGR} + \beta_2 \text{SIZE} + \beta_3 \text{EXTDEP} + \beta_4 \text{FOWN} + \beta_5 \text{EXP} + \beta_6 \text{OWNERSHIP} + \beta_7 \text{CONTROL} + \varepsilon$$

Country-level factors:

$$\text{Prob}(\text{AUDIT} = 1 \mid \text{IAS} = 1) = \alpha + \beta_1 \text{LEGAL} + \beta_2 \text{GCF} + \beta_3 \text{GCORR} + \beta_4 \text{JUDS} + \varepsilon$$

Variable	Parameter Estimates (Wald Chi-square statistics)			
	Firm Level Factors		Country Level Factors	
	Economic Development		Economic Development	
	high	low	high	low
Intercept	0.6385 (3.57)*	-0.6568 (66.61)***	2.5114 (20.73)***	3.4107 (7.99)***
INVGR	0.0391 (0.03)	0.9021 (16.49)***		
SIZE	0.3891 (12.94)***	0.3641 (8.65)***		
EXTDEP	0.0911 (0.38)	0.4178 (5.74)**		
FOWN	0.9166 (21.69)***	1.1151 (24.53)***		
EXP	0.0165 (0.01)	-0.1689 (0.85)		
OWNERSHIP	-1.0633 (51.26)***	-0.8747 (27.14)***		
CONTROL	-0.0175 (0.01)	-0.2015 (1.33)		
LEGAL			0.0033 (0.00)	0.1544 (0.92)
GCF			-0.9004 (20.19)***	-2.6831 (59.98)***
GCORR			0.4371 (6.16)**	1.2943 (17.22)***
JUDS			0.1776 (0.50)	0.5409 (2.19)
Pseudo R ²	0.09	0.15	0.03	0.14
Model significance	0.01	0.01	0.01	0.01
Likelihood ratio	139.54	130.06	24.32	121.44
Concordant pairs	71.80%	73.40%	59.70%	72.80%
N	1482	846	1482	846

Table 5 (continued)

Panel B: Second-tier logit model

$$\text{Prob (AUDIT =1/IAS =1)} = \alpha + \beta_1 \text{LOW} + \beta_2 \text{HIGH} + \beta_3 F_{\text{Score-LOW}} + \beta_4 F_{\text{Score-HIGH}} + \beta_5 C_{\text{Score-LOW}} + \beta_6 C_{\text{Score-HIGH}} + \varepsilon$$

Variable	Parameter Estimates (Wald Chi-square statistics)		
	(1)	(2)	(3)
LOW	-2.5623 (71.32)***	-2.7454 (72.18)***	-5.5535 (136.72)***
HIGH	-3.3868 (60.41)***	-2.2623 (4.37)**	-6.2499 (26.27)***
F _{score-LOW}	5.0558 123.47)***		4.6339 (86.17)***
F _{score-HIGH}	6.2539 (125.22)***		6.1356 (116.76)***
C _{score-LOW}		5.3026 (122.21)***	4.8913 (94.91)***
C _{score-HIGH}		4.7099 (12.51)***	3.6324 (6.44)**
F statistic: F _{score-LOW} = F _{score-HIGH}	6.53**		3.95**
F statistic: C _{score-LOW} = C _{score-HIGH}		0.17	0.69
F statistic: F _{score-LOW} = C _{score-LOW}			0.14
F statistic: F _{score-HIGH} = C _{score-HIGH}			2.55
Pseudo R ²	0.37	0.34	0.31
Model significance	0.01	0.01	0.01
Likelihood ratio	1056.50	946.27	1150.4
Concordant pairs	74.20%	68.20%	80.10%
N	2328	2328	2328

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

Variable definition:

- AUDIT = 1 if a firm's financial statements are reviewed by an external auditor, 0 otherwise;
IAS = 1 if a firm uses international accounting standards;
INVGR = 1 if growth in investment over the future three years is positive, 0 otherwise;
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;
EXTDEP = 1 if firm's financing over the last year coming from Equity, local commercial banks and foreign banks, 0 otherwise;
FOWN = 1 if the nationality of some owners is different than the place of domicile of the firm, 0 otherwise;
EXP = 1 if firm has export sales, 0 otherwise;
OWNERSHIP = 1 if a firm is organized in the form of partnership and sole proprietary, 0 otherwise.
CONTROL = Percentage shares that the top three stakeholders hold.
LEGAL = Legal development, 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 to be decisions enforced?' The responses take values between 1 to 6: where 1 indicates always; 2, usually; 3, frequently; 4, sometimes; 5, seldom; and 6 never;

GCF	=	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;
GCORR	=	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;
JUDS	=	General legal constraint, 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;
F _{Score}	=	score from the Firm-level factors model;
C _{Score}	=	score from the Country-level factors model;
LGDP	=	Natural logarithm of purchasing power-adjusted Gross Domestic Product (in US. Dollars) averaged over 1995 – 1999;
HIGH	=	1 if a firm observation is from a country with gross domestic product per capita (GDP) value above the sample median value of GDP per capita, and 0 otherwise;
LOW	=	1 if a firm observation is from a country with GDP value below the sample median value of GDP and 0 otherwise;
F _{Score} -LOW	=	F _{Score} * LOW;
F _{Score} -HIGH	=	F _{Score} * HIGH;
C _{Score} -LOW	=	C _{Score} * LOW;
C _{Score} -HIGH	=	C _{Score} * HIGH.