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Client, Industry and Country Factors Affecting Choice of Big N Industry Expert Auditors

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This study investigates client choice of industry specialist auditors from among the Big N (Big 4 or 5) in an international (non-U.S.) setting. We investigate client-specific, industry-level and country-level factors hypothesized to enhance or decrease Big N clients' demand for industry expertise. Using data for 29 countries and 14 broad industries from 1993-2005, we find that international client choice of industry specialist Big N auditors is positively associated with client size, client growth opportunities, and client capital intensity. The choice of industry specialists from among the Big N is more prevalent in countries where levels of investor protection, quality of financial reporting environment, and national economic development are higher. Clients belonging to regulated industries tend to select industry specialists.

Keywords: Global audit market, industry specialization, audit market shares, audit quality, international auditing, Big N auditors

JEL Classifications: G15; L11; M41; M49

Data Availability: The data are available from the Global Vantage database.

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1. Introduction

This paper examines determinants of clients' choices of industry expert Big N (Big 5 or Big 4) auditors in an international setting. Prior evidence indicates that, similar to U. S. clients, international (non-U.S.) clients desiring higher quality audits select Big N auditors (Fan & Wong [2005]).[1] We employ a sample of international clients who have chosen Big N auditors, to investigate characteristics of clients that take the additional quality-seeking decision of selecting industry specialists from among the Big N.[2] Empirical evidence suggests that industry specialist auditors have both the incentives and the ability to provide higher quality audit services. Simunic and Stein [1987] argue that industry-focused audit firms are more likely to invest in technologies, physical facilities, personnel, and organization control systems that improve the quality of audits in the firms' focal industries. Recent structural shifts by audit firms in the direction of greater industry focus suggest that industry specialization plays an increasingly important role in audit quality (Hogan & Jeter [1999]; Solomon et al. [1999]).

Industry-experienced auditors are better able to detect errors among clients within their industry specialization than outside their specialization (Bedard & Biggs [1991]; Wright & Wright [1997]; Owhoso et al. [2002]).

[1] For simplicity, we will refer to audit clients not headquartered in the U.S. as 'international' clients.

[2] By including in our sample only clients that purchase Big N audits, we avoid confounding the choice of a Big N auditor with the choice of an industry specialist auditor.

Specialist auditors are more likely to comply with auditing standards than non-specialists (O'Keefe et al. [1994]) and are less likely to be associated with SEC enforcement actions (Carcello & Nagy [2004]). Research also indicates that earnings quality, as measured by earnings response coefficients and discretionary accruals, is higher for client firms audited by industry specialists than non-specialists (Balsam et al. [2003]; Krishnan [2003]). Moreover, financial analysts rank clients of industry-specialist audit firms higher, in terms of disclosure quality, than clients of non-specialists (Dunn & Mayhew [2004]). Collectively, these findings suggest that an auditor's industry specialization has value to clients, and that capital markets view audits provided by industry specialists as having higher quality. Hence, the largest audit firms use industry specialization as a differentiation strategy (Mayhew & Wilkins [2003]).

Almost all of the evidence mentioned above is derived from U.S. audit engagements. However, the largest audit firms attempt to market their audit services globally on the basis of industry specialization. For example, PwC's Global web site provides the following statement:

> The depth and breadth of our industry experience, and our international perspective, are attributes that our clients value highly. We invest significant resources in acquiring, refining and sharing these capabilities to further benefit our clients … With offices in 769 cities in 144 countries, the member firms of PricewaterhouseCoopers offer a complete range of audit and

> [other] services, tailored to your specific industry, wherever you may need them. (http://www.pwc.com/ as of July, 2008)

Existing international evidence on whether industry specialization is a dimension of audit quality is mixed, and primarily based on Australian data (Ferguson & Stokes [2002]; Ferguson et al. [2003]).[3] Questions exist concerning the extent to which the Big N firms are able to provide consistent quality of audit services around the world, including industry expertise. The SEC [2000, 6] states, "We are concerned that audit firms may not have developed and maintained adequate internal quality control systems at a global level."[4] Hence, whether clients in countries other than the U.S. (and, perhaps, Australia) recognize and seek industry expertise from Big N auditors remains an empirical issue.

We measure an auditor's industry expertise based on the auditor's industry market share in the client's (non-U.S.) home country. Recent studies by Ferguson et al. [2003], Francis et al. [2005], and Francis et al. [2006] investigate the role of audit firms' individual office (city-level) industry expertise. Ferguson et al. [2003] and Francis et al. [2005] document that higher audit fees of industry leaders in the Australia and the U.S. audit market

[3] De Beelde [1997] uses 1994 data to investigate whether Big N auditors exhibit industry specialization. His international (non-U.S.) coverage consists of seven European countries, plus Japan. He finds little evidence of industry specialization as he defines it, and does not examine determinants of client auditor choice. Fan and Wong [2005] find that firms in eight East Asian countries employ Big N auditors when the firms are subject to high agency costs. That study does not investigate audit firm industry specialization.

[4] In [2000: fn. 8] the SEC expands on this theme: "See, for example, 34-40945, AAER-1098 (PricewaterhouseCoopers) and letters from the SEC Chief Accountant to the AICPA SEC Practice Section dated November 30 ,1998, and December 9, 1999 regarding the need for global quality internal controls over independence matters, available on the SEC website at <www.sec.gov>." Radebaugh and Gray [1997, 651] state: "Because most international public accounting firms are mixtures of different national public accounting firms, the quality of work performed is bound to vary."

are driven by auditors that are city-specific industry leaders. Francis et al. [2006] show that earnings quality is higher when the auditor is a city-specific industry leader, but not when an auditor is a national leader without also being a city-specific industry leader. We employ national-level measures of industry expertise, rather than city-level measures, because the database on which we primarily rely, for information about who audits whom, does not provide city-level information.[5]

This study employs 1993-2005 data from 29 countries, other than the U.S., to investigate factors affecting clients' choice of audits provided by industry specialized Big N auditors.[6] We employ two sets of explanatory variables proxying for international clients' demand for industry specialist audits. The first set consists of variables capturing characteristics of clients and their industries that are associated with demand for high quality and/or industry specialist audits (Francis & Wilson [1988]; DeFond [1992]; Craswell et al. [1995]). These include proxies for client size, financial leverage, growth opportunities, capital intensity, reliance on external capital, profitability, industry regulation, and industry concentration ratio. Our second set of explanatory variables consists of country-specific institutional factors representing legal protection of outside investors, quality of financial reporting, and national economic development.

[5] Most countries in our sample are small enough for audit personnel to travel anywhere within those countries, meet with client managers, and return to their offices, in a single day. Smaller countries frequently contain only one or two cities in which most publicly-traded clients are located. Thus, the distinction between city-level and national-level industry expertise is not as important in our study as for studies of larger nations such as the U.S.

[6] Use of dependent variables that capture whether clients of Big N auditors choose industry leaders avoids confounding the demand for Big N audits with demand for audits provided by industry specialists. It is worthwhile to note that all of our sample companies are audited by the Big N. Thus, we investigate whether clients having certain characteristics (e.g., large size) choose industry specialists from among the Big N.

The results provide substantial support for our hypotheses.[7] Of the six client-specific explanatory variables, three have significant coefficients, with expected signs, across *all* estimated models in which they appear. Specifically, choice of industry specialist auditors by international Big N clients is positively associated with client size (*LSALE*), client growth opportunities (market-to-book equity ratio, *MB*), and client capital intensity (*CAPINT*). One of the two industry-level variables, membership in a regulated industry (*REGIND*), is positively associated with choice of industry specialist Big N auditors in nine out of ten models in which it appears. At the country level, the choice of industry specialists from among the Big N is more prevalent in countries that offer greater legal protection to investors (*LAW_ENF*, *VOTING* and *LEGAL*), in countries having better financial accounting reporting quality (*DISC*, *FIN_TAX* and *ACCTG*), and in wealthier countries with more developed stock markets (*LGDP*, *SMDEV* and *ECON*). These results hold even among clients located in the less developed economies.[8] Weaker evidence suggests that clients having greater financial leverage (*LEV*) tend to purchase industry-specialist Big N audits (significant in five out of ten models). The remaining three explanatory variables: issuance of equity (*ISSUE*), client losses (*LOSS*), and industry concentration (*HINDEX*) either have coefficients that are almost all insignificant, or some significant coefficients with signs opposite to expectations.

Our study contributes to the literature in several ways. This study is one of the first to investigate whether industry- and country-level factors

[7] The results summarized are those in Table 4.
[8] That is, clients in *relatively* wealthier countries tend to purchase industry specialist audits, even among the set of less-developed economies.

systematically affect choice of industry specialist auditors around the world.[9] We find that client-specific factors and country-level factors are more important than industry level factors. Second, our study builds on recent advances in the finance literature on the role of legal protection for financial market development, ownership structure, and private control benefits. We document that the level of investor protection appears to affect the demand for industry specialist Big N auditors. Third, our study also contributes to a growing body of accounting research on the economic effects of differences in financial reporting across countries. We provide empirical evidence that demand for Big N industry specialist audits is positively related to the quality of financial reporting environments world-wide. Fourth, we show that national wealth and, to a lesser extent national stock market development, have an important effect on auditor choice. Finally, this study investigates choice among Big N audit firms in international audit markets. Numerous studies have investigated the choice between Big N and non-Big N audit firms, mostly using U. S. data, but few studies have investigated client choice among the Big N.

The remainder of the paper is organized as follows. A second section develops hypotheses and relates them to explanatory variables. Section three presents our models and dependent variables. Section four describes the sample and reports our primary test results. A fifth section provides additional analyses, and a final section presents a summary and conclusions.

[9] We note that our use of *client-level* factors to explain demand for industry expert auditors is not unprecedented in the literature (see Godfrey & Hamilton [2005]). Our use of client-level factors in an international setting, however, is new. We control for *country-level* factors because of the international nature of our sample clients.

2. Hypotheses and Explanatory Variables

In this study, we consider client-specific, industry-level and country-level factors that enhance or hinder the demand for audits provided by Big N accounting firms having expertise in various industries. We assume that an audit firm's industry expertise is costly to develop, but results in higher quality audits.[10] High quality audits arguably increase the economic value of financial accounting information (Bushman & Smith [2001]). The audit market is not fully integrated across countries due to the fact that some knowledge is not easily transferable, audit techniques require modifications, and differences in regulation exist around the globe. However, in spite of these barriers, we expect to observe employment of industry specialists in settings in which demand for high quality audits is derived from the potential benefit of more reliable financial information. We turn now to a detailed discussion of factors that should increase or decrease international demand for audits by industry specialists.

2.1 Firm-Specific Factors

Prior international evidence indicates that clients seeking higher quality audits choose Big N auditors (Fan & Wong [2005]). Industry specialization also can be viewed as a dimension of international audit quality (Craswell et al. [1995]). Therefore we expect that international client choice of Big N auditors who *also* are industry specialist auditors, represents demand

[10] Industry expertise is costly to develop not only because it requires gathering and analyzing industry data, and modifying audit procedures for different industries, but also because a 'critical mass' of clients must be accumulated in a target industry, in the face of competition from other audit firms. This could lead to heavy discounting of initial audit fees.

for audit quality higher than that provided by Big N auditors who are not industry specialists. We expect the same variables that explain choice of a Big N versus non-Big N auditor also will explain choice of an industry specialist auditor from among the Big N. DeFond [1992] and Francis and Wilson [1988] demonstrate that the demand for quality-differentiated (Big Six) audits is an increasing function of proxies for firms' agency costs. Agency costs are problematic when information asymmetry exists between principals and agents, and when opportunities exist for agents to transfer corporate wealth to themselves. Client-specific demand for high quality audits should be positively associated with proxies for those conditions: opportunity to transfer wealth via accruals (capital intensity), proxies for information asymmetry (growth opportunities), and opportunities for managers to expropriate capital provided by owners and lenders (client size, financial leverage, need for external capital). We employ client profitability (loss or no loss) as a control variable, without specifying an expected sign.[11] See Godfrey and Hamilton [2005] and Francis et al. [1999] for additional discussion of these explanatory variables.[12] These two studies examine the demand for auditor specialization in the U.S. and Australia. We complement these studies by assessing whether the demand for auditor industry specialization applies around the world. Our first hypothesis, stated in alternate form, is:

[11] The expected coefficient sign for *LOSS* is unclear. Clients having poor financial performance arguably are less likely to seek (or be accepted by) large, high quality auditors. However, Choi and Wong [2007] find a positive association between *LOSS* and choice of high quality auditor.

[12] We do not include a variable that captures the operating cycle as the inclusion of that variable reduces our sample by 50%.

H1: Choice of an industry specialist among Big N auditors is positively associated with client size, financial leverage, growth, capital intensity, and the need for external financing.

Client size ($LSALE_j$) is measured by log of sales. Financial leverage (LEV_j) is measured by a long-term debt to assets ratio. We use MB_j (the market-to-book equity ratio) to proxy for growth opportunities. $CAPINT_j$ is the capital intensity measured by gross property plant and equipment divided by sales. The need for external capital ($ISSUE_j$) is an indicator variable that equals 'one' if the change in external equity is greater than 15% and 'zero' otherwise. $LOSS_j$ is a control variable that equals 'one' if net income is negative and 'zero' otherwise.

2.2 Industry-Level Factors

2.2.1 Industry Concentration

Firms in industries characterized by small numbers of powerful, differentiated producers (i.e. firms in concentrated industries) desire auditors who do not also audit their competitors (Kwon [1996]). As the degree of concentration in an industry increases, surviving clients will be reluctant to use the same auditors, because they do not want to risk the transfer of proprietary information to their competitors. In addition, the benefits to investors of financial accounting information arguably are less in highly concentrated industries (Bushman & Smith [2001]). Thus industry specialist

auditors are less likely to be employed in concentrated industries.[13] Our second hypothesis, in alternate form, is:

H2: Choice of an industry specialist among Big N auditors is negatively associated with a proxy for industry concentration.

The proxy for industry concentration is the Herfindahl index ($HINDEX_k$), which is defined as $\sum_{j=1}^{n} s_j^2$ where s_j is market share of firm j based on sales in industry k.[14] Larger values correspond to more concentrated industries.

2.2.2 Regulated Industries

Banks, insurance companies, and several other businesses are subject to incremental regulation in most countries. Industry regulation requires audit firms to be familiar with the specialized reporting rules and filing requirements set by government or private sector regulatory bodies. For example in the U.S., the American Institute of Certified Public Accountants (AICPA) publishes individual industry audit guidelines for oil and gas companies, airlines, security dealers, finance companies, and other regulated industries. Those international audit firms that invest in acquisition of regulated industry expertise are likely to be viewed as providers of higher

[13] It is worth noting that audit firms arguably have less incentive to develop industry expertise in highly concentrated industries since, by definition, such industries tend to contain only a few large clients. If Big N firms tend to have fairly equal shares among clients in a concentrated industry, then designation of one firm as the industry leader creates a distinction without a difference. Supply-side considerations therefore suggest that there might be no association between industry concentration and employment of an industry specialist auditor.

[14] Subscript "$_k$" denotes industry membership which is determined by the SIC code following the classification schemes used by Frankel et al. (2002): agriculture (0100–0999), mining & construction (1000–1999, excluding 1300–1399), food (2000–2111), textiles & printing/publishing (2200–2799), chemicals (2800–2824, 2840–2899), pharmaceuticals (2830–2836), extractive (2900–2999, 1300–1399), financial institutions (6000–6999), durable manufacturers (3000–3999, excluding 3570–3579 and 3670–3679), transportation (4000–4899), utilities (4900–4999), retail (5000–5999), services (7000–8999, excluding 7370–7379), computers (3570–3579, 3670–3679, 7370–7379).

quality audits, for clients in those regulated industries.[15] In essence, client choice of an industry specialist auditor conveys a message of greater information quality in regulated industries. Our third hypothesis, in alternate form, is:

H3: Choice of an industry specialist among Big N auditors is positively associated with membership in a regulated industry.

Similar to Francis et al. [1999], and following Eichenseher and Danos [1981], we define variable $REGIND_k$ to represent regulated industries. $REGIND_k$ is coded 'one' if the industry is railroad (SICs 4011 and 4100), trucking (4210 and 4213), airlines (4512, 4513, 4522, and 4581), telephone communications (4812 and 4813), electric companies (4911), gas companies (4922, 4923, 4924), personal credit (6141), and insurance (6311), and 'zero' otherwise.

2.3 Country-Level Factors

Our expectations, regarding the effects of country-level factors on demand for industry specialist audits, are based on the idea that the value of audits is derived from the value of high quality financial information. In turn, high quality information is more valuable in nations that protect investor wealth, in nations that are more economically developed, and in which national regulators are committed to facilitating or requiring high quality financial information.

[15] The existence of special reporting rules, filing guidelines, and audit standards arguably serve as a barrier to entry for audit firms desiring to serve regulated clients. The largest international audit firms are likely to have the resources needed to hurdle this barrier to entry. It is also possible that leading national (rather than international) audit firms will acquire knowledge of the industry-specific regulations that are particular to their home countries.

2.3.1 Protection of Outside Investors

Research in finance suggests that protection of outside investors is a key determinant of financial market development, capital and ownership structures, dividend policies, and firms' equity valuations (e.g., La Porta et al. [1997, 1998, 2000]). Bushman and Smith [2001] argue that the benefits of financial accounting information are greater in countries that protect investors against expropriation of wealth by governments. We assert that the benefits of higher quality audits (by Big N industry specialists) likewise are greater in such countries. Using categories of investor protection drawn from La Porta et al. ([1997, 2000]), we investigate whether such protection has a systematic influence on client auditor choice among the Big N. Our fourth hypothesis, in alternate form, is:

> **H4**: Choice of an industry specialist among Big N auditors is positively associated with proxies for national levels of legal protection for investors.

We employ three proxies for investor protection. The first proxy is a law enforcement index (LAW_ENF_l) which is the mean score of three legal enforcement variables reported in La Porta et al. [1998], and used in Leuz et al. [2003].[16] The law enforcement index values range from zero to ten, with higher scores for greater law enforcement. The second proxy for shareholder legal protection is a measure of shareholder voting rights. 'Antidirector rights', reported in La Porta et al. [1998], indicates how easy it is for

[16]Subscript "$_l$" denotes country "l". The three variables are (1) the mean for 1980-1983 of a variable provided by Business International Corp., capturing the efficiency and integrity of the judicial system; (2) the mean for 1982-1995 of a rule of law variable obtained from International Country Risk; and (3) the mean for 1982-1995 of a corruption variable that assesses the corruption in government, obtained from International Country Risk.

shareholders to exercise their voting rights.[17] This index ranges from zero to five, with higher scores indicating greater protection of shareholders. For convenience, we name this variable $VOTING_l$. The third proxy, $LEGAL_l$, is the principal component for the two legal variables, derived from a factor analysis. We expect all three variables to be positively associated with choice of Big N industry specialist auditors.

2.3.2 Financial Reporting Environment

National financial reporting environment is an important institutional factor that affects a company's accounting information quality. Previous studies suggest that higher reporting quality, through expanded disclosure, is associated with greater market liquidity and lower cost of equity capital (see Healy & Palepu [2001], for a detailed review). In an international setting, Young and Guenther [2003] show that countries whose financial accounting environments lead to greater disclosure of value-relevant accounting, are associated with higher international capital mobility. Hence, we expect a greater demand for high-quality (industry-specialized) Big N auditors in a strong financial reporting environment, to assure outside investors of the quality and credibility of accounting information in decision making (Fan & Wong [2005]). Our fifth hypothesis, stated in alternate form, is:

[17] The index aggregates the following components of shareholder rights: (1) the ability to vote by mail; (2) the ability to gain control of shares during the shareholders' meeting; (3) the possibility of cumulative voting for directors; (4) the ease of calling an extraordinary shareholders meeting; and (5) the availability of a mechanism allowing minority shareholders to make legal claims against the directors.

H5: Choice of an industry specialist among Big N auditors is positively associated with proxies for quality of national financial reporting environment.

We use three proxies to measure the extent of accounting information provided in each country. The first proxy is the disclosure index ($DISC_I$) developed by the Center for International Financial Analysis and Research (CIFAR [1995]), and used by Saudagaran and Diga [1997] among others. CIFAR creates a country-specific index by rating the annual reports of at least three firms in every country for inclusion or omission of 90 specific items.[18] Each country is given a score ranging from zero to 90, with higher scores indicating more disclosure. The second proxy for financial reporting environment is the extent of financial and tax accounting conformity reported by Hung [2000].[19] In some countries, financial reports effectively reflect tax laws, which in turn are influenced by political, economic, and social objectives. Because the primary objective of tax rules is not to satisfy the information needs of capital market participants, the value relevance of financial reports in countries with high tax-book conformity is reduced (Ali & Hwang [2000]). The value of financial information (and the derived value of higher quality audits) potentially is greater when there is weak link between tax and financial accounting rules. Using Hung's ratings, we create variable FIN_TAX_I to capture the extent of tax and financial accounting alignment (tax-to-book). FIN_TAX_I is an indicator variable that equals

[18] The 90 items include specific disclosures in the following seven categories: general information (8 items), income statement (11 items), balance sheet (14 items), funds flow statement (5 items), accounting policy disclosure (20 items), shareholders' information (20 items), and other supplementary information (12 items).

[19] Hung [2000] classifies a country's alignment between financial and tax accounting rules based on the following criteria: existence of deferred taxes, dominance of legal form over substance, allowance of additional accelerated depreciation, and dependency of amortization on tax laws.

'one' if tax accounting and financial accounting methods diverge, and 'zero' if they are similar.[20] The last proxy, $ACCTG_l$, is the principal component for the financial reporting variables, derived from a factor analysis. If higher quality audits are more valuable in nations requiring better disclosure and financial reporting, we expect all three variables to be positively associated with choice of Big N industry specialist auditors.

2.3.3 National Economic Development

Claessens and Laeven [2003] and Doidge et al. [2007] posit that a high level of national economic development is associated with higher quality institutions that facilitate private contracting. This in turn should increase demand for reputable information intermediaries such as high-quality, industry-specialist auditors, to assure and certify information that is used in the contracting. Our sixth hypothesis, stated in alternate form, is:

> **H6**: Choice of an industry specialist among Big N auditors is positively associated with proxies for national economic development.

We employ three metrics that reflect national economic development. The first is the level of annual GDP per capita in each country. We expect greater economic wealth to have a positive impact on auditor choice because many companies in less wealthy countries may not be able to afford hiring high quality auditors (Choi & Wong [2007]). Gross Domestic Product per capita (GDP), based on 2000 constant prices, is collected from the World Bank's

[20] The various country-level variables (*LAW_ENF*, *VOTING*, *DISC*, and *FIN_TAX*) each are measured at a specific point in time (in the 1980s or 1990s) rather than being measured each year. We assume that countries' institutional environments remain stable over lengthy periods of time. To the extent this assumption is incorrect, it should bias against finding significant coefficients for these variables.

World Development Indicators database. We log-transform the GDP data (denoted by *LGDP*) since GDP is highly skewed. Our second proxy for national economic development is the extent of development of national stock markets. Ali & Hwang [2000] argue that investors in market-oriented financial systems (where equity financing is more prevalent) demand more information than those in bank-oriented financial systems (where debt financing is more important). They also should demand higher quality information. Fan & Wong [2005] provide evidence that firms employ high-quality auditors when seeking external capital in the stock markets. The strong information oversight provided by a high quality auditor is likely to reduce information asymmetry between a company's managers and investors, thus lowering the cost of capital. Hence, we expect demand for industry specialist Big N auditors to be greater where equity markets are more developed. Stock market development (*SMDEV*) is measured by stock market capitalization divided by gross (not per capita) GDP. The data for *SMDEV* are obtained from Beck et al. [2000]. The final proxy is $ECON_l$, which is the principal component for the national economic development variables, derived from a factor analysis. We expect all three variables to be positively associated with choice of Big N industry specialist auditors.

3. Research Design

3.1 Measure of Auditor Industry Expertise

Auditor industry expertise is typically measured by an auditor's industry market share (e.g., Danos & Eichenseher [1982]; Balsam et al.

[2003]; Krishnan [2003]).[21] We calculate a Big N auditor's market share in a given industry, and year, as follows:

$$ADTR\_MS_{ik} = \frac{\sum_{j=1}^{J_{ik}} SALES_{ijk}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ik}} SALES_{ijk}} \quad (1)$$

We suppress the subscript denoting a specific year. *SALES* denotes client sales revenue. The numerator is the sum of the sales of all J_{ik} clients of audit firm i in industry k, where the industry is as defined in Frankel et al. [2002]. The denominator in equation (1) is the sales of all J_{ik} clients in industry k, summed over all I_k audit firms providing audits to that industry.[22]

Our measure of auditor i's industry k expertise is based upon that auditor's market share among clients in industry k that are headquartered in each individual country. The assumption is that audit firm i is more likely to be perceived as offering expertise in industry k and country l if audit firm i has a high market share in industry k within country l. Our dependent variable, $SPEC_{jk}$, is defined as 'one' if client j, headquartered in nation l, purchases audits from the auditor having a 'large' value of *ADTR_MS* in industry k in nation l. $SPEC_{jk}$ is defined as 'zero' otherwise. We consider an auditor to have a large market share in the home industry k, if its value of *ADTR_MS* for k is

[21] Conceptually, industry market share would be measured as audit fees earned by an auditor in an industry, as a proportion of the total audit fees earned by all auditors that serve that particular industry. Based on data availability, prior studies (such as Krishnan [2003]) use client sales rather than auditor fees to compute proxies for auditor market shares in industries. Following these studies, we use client sales to estimate industry market shares, since data about audit fees are either costly to collect or not available in many of the sample countries under investigation.

[22] All I_k audit firms include both Big N and other audit firms.

at least 20% prior to 1998, 24% for the 1998-2001 period, and 30% for the 2002-2005 period.[23]

3.2 Model Specification

We estimate the following logistic regression model of auditor choice using client-specific, industry-level, and country-level explanatory variables:

$$SPEC = \alpha_o + \beta_1 LSALE_j + \beta_2 LEV_j + \beta_3 MB_j + \beta_4 CAPINT_j + \beta_5 ISSUE_j + \beta_6 LOSS_j + \beta_7 HINDEX_k + \beta_8 REGIND_k + \beta_9 COUNTRY_l + e_{jk} \quad (2)$$

where

$SPEC$ = a dichotomous variable coded 'one' if client j purchases audits from the auditor having at least 20%/24%/30% market share (for the period prior to 1998, 1998-2001, and after 2001 respectively) in industry k in the national market, and 'zero' otherwise;

$LSALE_j$ = the log of client j's sales;

LEV_j = the long-term debt-to-asset ratio of client j;

MB_j = client j's market-to-book equity ratio;

$CAPINT_j$ = client j's capital intensity measured by gross property, plant & equipment divided by sales;

$ISSUE_j$ = a dichotomous variable coded 'one' if client j's book value of equity increases by more than 15% from the prior year; 'zero' otherwise;

[23] Following Neal & Riley [2004], we employ a cut off for 'large' market shares of (1/N)*1.2, where N is the number of big international audit firms. The largest firms are the Big 6, during the period 1993-1997, the Big 5 after the merger between Coopers and Lybrand and Price Waterhouse in 1998, and Big 4 after the demise of Arthur Andersen in 2002.

$LOSS_j$ = a dichotomous variable coded 'one' if client *j*'s net income is negative; 'zero' otherwise;

$HINDEX_k$ = Herfindahl concentration ratio of client *j*'s industry *k*;

$REGIND_k$ = a dichotomous variable coded 'one' if client *j*'s industry *k* is regulated; 'zero' otherwise. See the text for specification of regulated industries;

$COUNTRY_l$ = Country-level variables: LAW_ENF_l, $VOTING_l$, $LEGAL_l$, $DISC_l$, FIN_TAX_l, $ACCTG_l$, $LGDP_l$, $SMDEV_l$ and *ECON*;

COUNTRY-level variables include:

LAW_ENF_l = a law enforcement index for country *l* (see definition in text); higher scores indicate better law enforcement;

$VOTING_l$ = an investor voting rights index for country *l* (see definition in text); higher scores indicate better voting rights;

$LEGAL_l$ = principal component extracted from *LAW_ENF* and *VOTING*;

$DISC_l$ = an information disclosure index for country *l* (see definition in text); higher scores indicate more extensive disclosure;

FIN_TAX_l = a dichotomous variable coded 'one' if country *l*'s tax accounting and financial reporting methods diverge substantially (Hung [2000]); 'zero' otherwise;

$ACCTG_l$ = principal component extracted from *DISC* and *FIN_TAX*;

$LGDP_l$ = natural logarithm of GDP per capita for country l;

$SMDEV_l$ = stock market capitalization divided by gross GDP for country l;

$ECON_l$ = principal component extracted from *LGDP* and *SMDEV*.

4. Empirical Results

4.1 Sample

Data for the sample period 1993-2005 are obtained from the Global Vantage database. Our sample countries are determined as follows. First, we begin with the 49 countries (with the necessary institutional data) that are listed in La Porta et al. [1998]. To meaningfully compute and compare auditors' market shares, and clients' industry concentration ratios across industries and countries, we require at least 10 observations in each industry, for a particular year, to be included in the sample. A total of 35 countries meet the criterion (that is, have one or more industries containing 10 companies). We remove Japan, Korea, and Pakistan from the sample, because the identity of the auditors is not indicated in the database for these countries.[24] We next remove three countries (Ireland, New Zealand, and Turkey) since most of the data for control variables are not available for these countries in the Global Vantage database. Our final sample consists of the following 29 countries: Australia, Austria, Belgium, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Israel, Italy, Malaysia,

[24] More than 95% of the auditor names are designated as 'others' in Global Vantage for these three countries. For example, the local name for KPMG in Japan is Kainan Audit Corporation, and it is recorded by Global Vantage as 'other'. Hence, we are not able to obtain the identity of the auditors in these countries.

Mexico, Netherlands, Norway, Philippines, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, and the United Kingdom.

We employ 14 broadly-defined industries based on Frankel et al. [2002]'s classification, providing a total of 39,053 firm-years, usable for the study.[25] Panels A, B, and C of Table 1 report the distribution of observations by country, year, and industry, respectively. In Panel A, there is significant variation in the number of firm-year observations across countries due to differences in capital market development, country size, and the availability of complete financial accounting data. Except for the United Kingdom, no country contributes as much as eleven percent of the total firm-years. In the subsequent sensitivity analysis, we find that our results are robust after excluding clients in the United Kingdom, and after excluding clients located in developed countries in general. The percent of companies audited by Big N firms exceeds fifty percent for a majority of the sample countries. Countries included in our tests are all drawn from Big N clients.

In Panel B, the number of firm-years grows over time because of the increasing coverage of international companies in the Global Vantage database. The decrease in firm-years for 2005 reflects incomplete database coverage of that year. Panel C reports the distribution of observations by industry. The largest number of firm-years is found among durable manufacturers.

[Insert Table 1 here]

[25] We winsorize each of the continuous control variables (*LEV*, *CAPINT*, *LSALE*, *MB*) used in the regression at the top and bottom one percent to remove extreme values.

4.2 Descriptive Statistics for Variables

Table 2, Panel A, shows the means of the dependent variable, *SPEC*, the means for client-specific variables (*SALE*, *LEV*, *MB*, *CAPINT*, *ISSUE*, *LOSS*), and means for industry-level variables (*HINDEX* and *REGIND*), by country. Table 2, Panel B presents the country-level explanatory variables.[26] The values for *VOTING*, *LAW_ENF*, and *DISC* are constant over time for an individual country, e.g., the value for *LAW_ENF* for Australia is 9.51 for each year. The values for *SMDEV* and *GDP* are mean values, computed over 1993-2005. We note that the amounts of our country-level explanatory variables differ substantially across countries having highly developed economies. Consider, for example, investors' voting rights (*VOTING*). The level of this variable is highest in the U.K. and its former colonies such as Australia and Canada. It is substantially lower in some countries in continental Europe: Austria, Belgium, Denmark, and Germany. Yet all the countries named have developed economies. The same is true to some extent for the other country-level variables.

[Insert Table 2 here]

4.3 Variable Correlations

Table 3 presents the Pearson correlations for the dependent and explanatory variables. We apply a log transformation to country GDP (denoted as *LGDP*) due to the highly skewed distribution of the variable. Consistent with our expectation, *SPEC* is positively and significantly

[26] Eleven countries have a low conformity of accounting and tax reporting, while eight countries have high conformity of accounting and tax rules. Ten countries are not coded as these countries are not included in Hung [2000]'s sample and hence not reported in Hung's study.

correlated with most of the explanatory variables (*LSALE*, *LEV*, *CAPINT*, *REGIND*, *LAW_ENF*, *VOTING*, *LEGAL*, *FIN_TAX*, *ACCTG*, *LGDP*). However, inconsistent with our expectation, *SPEC* is positively associated with *HINDEX*, and negatively associated with *SMDEV* and *ECON*. We emphasize that these are univariate correlations, and we rely on the regression analyses to draw inferences. The correlations among the country level variables are high, so we employ them in two ways. First, we estimate models in which we enter only one country-level variable at a time (or one country-level principal component factor) into our regressions. Second, we estimate one model in which all principal components extracted from the legal, financial reporting and national economic development variables are entered simultaneously.[27] The former regressions allow us to determine which country-level variables (including principal component factors) are individually significant, and whether any client-level or industry-level variables are sensitive to inclusion of specific country-level variables. The latter regression indicates which of the country-level principal component factors have explanatory power when all are included.

[Insert Table 3 here]

4.4 Regression Results

The (logistic) regression model results of estimating equation (2) are presented in Table 4. The model is estimated using a maximum of 39,053 firm-year observations. In five results columns the number of observations is

[27] This procedure reduces a potential multi-collinearity problem. Factor analysis indicates that *LAW_ENF* and *VOTING* are measuring one construct. The same is true for *LGDP* and *SMDEV*, and for *FIN_TAX* and *DISC*. Hence, we use the principal components, *LEGAL*, *ACCTG*, and *ECON*, derived from the factor analysis, in the combined model.

less due to missing data for variables *DISC* and *FIN_TAX*. The regressions in Table 4 employ multiple observations per client over time. Such observations are unlikely to be fully independent, and thus regression residuals may be serially or cross-sectionally correlated. Hence, we run logistic regressions with clustered robust errors to account for both serial and cross-sectional correlations (Rogers [1993]; Williams [2000]; Petersen [2006]). Following Choi & Wong [2007], for all tests reported below, the Wald-statistics are based on clustered standard errors (clustered by country and year).[28]

The dependent variable captures whether or not the Big N auditor chosen is an industry specialist. The first nine regression models include only one country-level variable each, while the last regression model includes all principal components derived from the factor analysis (*LEGAL*, *ACCTG*, and *ECON*). Consistent with our expectation, *SPEC* is positively and significantly associated with *LSALE*, *MB*, and *CAPINT* at the 1% level, providing support for hypothesis H1 (i.e. three out of five proxies are significant with expected signs). *LEV* is positively associated with *SPEC* in five models while *ISSUE* is either not associated with *SPEC*, or is associated with a coefficient sign opposite to expectation. *LOSS* is positively associated with *SPEC* in several models. Among the industry-level variables, *SPEC* is consistently and positively associated with *REGIND*, in agreement with H3. However, inconsistent with H2, we do not find a significant and consistent association between *HINDEX* and *SPEC*. This finding agrees with a recent study by the General Accounting Office [2003]. The GAO reports that when large public companies were asked whether they would choose an accounting firm as their

[28] We also run the regression clustered by country, industry, and year. The results are similar.

auditor when that firm also audits one of their competitors, 92% of the respondents said 'yes'.[29]

Table 4 also explores the explanatory power of the country-level variables. Because of the substantial correlations between some country-level variables, we present some models that include only one of the country-level variables in each regression. This enables us to determine whether the significance levels of individual client-level and industry-level variables are contingent on the inclusion of particular country-level variables. Consider first the proxies employed to test H4: *LAW_ENF*, *VOTING*, and *LEGAL*. In models 1-3, the coefficients of of these variables are positive as expected and highly significant. Together, the coefficient results offer strong support for H4: choice of an industry specialist auditor is positively associated with proxies for national levels of legal protection. The significance of other variables is unaffected by which of these country-level variables is included in the model.

Next consider the results for variables used to test H5: *DISC*, *FIN_TAX*, and *ACCTG*. In models 4-6, the coefficients for these variables are positive as expected and highly significant. Together, the coefficient results offer strong support for H5: choice of an industry specialist auditor is positively associated with proxies for national quality of financial reporting and disclosures. Inclusion of *DISC* has no effect on the significance of other variables in the model. However, inclusion of either *FIN_TAX* or *ACCTG* has

[29] Another possible explanation is that the Herfindahl index is a poor proxy for industry concentration. We compute it using Global Vantage database, so only publicly traded companies' data are employed in constructing this index. Ideally the index should be computed using data for both public and private firms (Ali et al. [2008]). We do not employ private companies' data because it is unavailable for most clients in an international setting.

the effect of reducing the explanatory power of *REGIND*, and increasing the explanatory power of *ISSUE* and *LOSS*. Finally, consider the results for variables used to test H6: *LGDP*, *SMDEV* and *ECON*. In models 7-9, the coefficients for these variables are positive and significant, offering support for H6. Inclusion of each of these variables does not affect the significance of other variables in the models. Choice of an industry specialist auditor is positively associated with proxies for national economic development.

We include all three country-level variables extracted from the factor analysis in model 10. The coefficients of *ACCTG* and *ECON* are positive and highly significant, while the coefficient of *LEGAL* is positive and marginally significant. Our results suggest that legal environment, financial reporting quality and national economic development have incremental power in explaining choice of industry specialists among Big N auditors. Overall, our results in Table 4 support the importance of several client-specific factors in the decision to choose Big N industry-specialist auditors: size, growth prospects, and capital intensity. The results also indicate the importance of client membership in a regulated industry, but not of industry concentration.[30] Finally, the results suggest that three country-level institutional factors affect choice of industry specialists from among Big N auditors.

[Insert Table 4 here]

4.5 Additional Analyses

4.5.1 Alternative Dependent Variable

[30] We note that a client-level factor, capital intensity, is significant. High capital intensity serves as a barrier to entry, and capital intensity varies across industries. Thus it is likely that the capital intensity variable pre-empts some of the explanatory power of industry concentration.

We perform several sensitivity tests to check the robustness of our results. First, as an alternative to dependent variable *SPEC*, we define $SPEC1_{jk}$ as equal to 'one' if client *j*, headquartered in nation *l*, purchases audits from the auditor having the largest value of *ADTR_MS* in industry *k* in nation *l*. $SPEC1_{jk}$ is defined as 'zero' otherwise. In essence, this dependent variable defines only one auditor per industry-country pair as an industry specialist.

Results for the alternative dependent variable *SPEC1* are reported in Table 5. The results are consistent with those reported in Table 4, with the following major exceptions. First, *HINDEX* is positively and significantly associated with *SPEC1*, while in our main analysis of Table 4 we do not find any association between *HINDEX* and *SPEC*. Second, the coefficients of *REGIND* are less significant than in Table 4. Although the Table 4 and Table 5 results are largely in agreement, in those respects where they differ we prefer to rely on Table 4. *SPEC1* arguably is overly restrictive in limiting industry-specialist status to a single Big N firm per industry-country pair.

[Insert Table 5 here]

4.5.2 Stability of Audit Specialists over Time

A maintained hypothesis of this study is that identities of Big N industry specialists are fairly stable over the entire sample period.[31] We attempt to measure the stability of audit specialists over three sub-periods: before 1998 (Big N = Big 6), between 1998 and 2001 (Big N = Big 5), and 2002-2005 (Big N = Big 4). We compute a stability metric for each industry-country pair over each sub-period. For example, consider the 2002-2005 sub-

[31] If this assumption is not valid it should bias against the significance of our explanatory variables.

period during which Big N = Big 4. Suppose for a particular country (say Singapore), and a particular industry (say Computers), the market leader for the entire four years is KPMG. Then the stability metric is "1." If KPMG is the market leader for three of the four years, then the stability metric is '0.75.' Hence the stability statistic captures the proportion of years that the same auditor is the market leader in the industry over a specific period. The larger the statistic is, the greater the stability of audit specialists over time. The mean statistic for all countries and all industries for the period 2002-2005 is 0.87. This number is quite high, indicating stable audit specialists over the years 2002-2005. We repeat the analyses for the period 1998-2001 and for 1993-1998. The mean statistics are 0.87 and 0.90 respectively.[32] Overall, the stability statistic is high, and does not vary much across sub-periods, suggesting that the identities of audit specialists are stable over the entire sample period 1993-2005.

4.5.3 Removing Firms cross-listed in the U.S. Market

We remove 2,119 firm-years relating to those firms that cross-list their shares in the U.S. market, since the firms' auditor choice may be related to their overseas equity issues (Fan & Wong [2005]). The results, as reported in Table 6, provide similar results as those in Table 4 except for the following major differences. First, the coefficients of *REGIND* are not significant in models 5, 6 and 10. Second, the coefficient of *SMDEV* is not significant in

[32] We compute metrics for three sub-periods (rather than for the entire sample period) because the identities of Big N industry specialists are non-comparable across periods due to Big N mergers.

model 8. Third, the coefficients of *HINDEX* are negative and significant in models 5, 6, 7 and 10.

[Insert Table 6 here]

4.5.4 Alternative proxies for financial reporting

To supplement results for variables *DISC* and *FIN_TAX*, we use two alternative measures to capture the quality and quantity of accounting disclosure: (1) the disclosure index constructed by Young and Guenther [2003]; and (2) the accrual index constructed by Hung [2000]. Our (untabulated) results indicate that the disclosure index and accrual index are positively and significantly associated with *SPEC* at the 1% level. We also construct a principal component based on these two alternative proxies for financial reporting quality. Our untabulated results indicate that, along with *LEGAL* and *ECON*, this alternative principal component is positively and significantly associated with *SPEC* at the 1% level.

4.5.5 Legal Origins

A concurrent study (Francis & Wang [2008]) suggests that demand for Big N auditors is dependent on a country's legal origin. We therefore test whether legal origin (*COMMON*, coded 'one' if the country has a common law origin, and 'zero' if the country has a code law origin) also is associated with industry specialist auditor choice. The (untabulated) results indicate that *COMMON* is positively and significantly associated with *SPEC* (Wald statistic 5.98, p=0.01). This finding suggests that legal origin (similar to *LAW_ENF* and *VOTING*) captures the legal environment in each country and

is positively associated with demand for industry specialist auditors. We also estimate a model that includes *COMMON*, along with *ACCTG* and *ECON*. Our untabulated results indicate that *ACCTG* and *ECON* continue to be significant at the 1% level, but *COMMON* is not statistically significant.[33]

4.5.6 Clients' Demand for Audit Specialists in Less Developed Countries

In our main analysis, we show that demand for audit specialists is systematically associated with client and industry characteristics. Some of these results have been documented previously in developed economies (e.g., Australia) and it is worthwhile to explore whether such relations still hold in developing economies. We address this issue in two ways to ensure that our findings are not being driven by the large number of observations provided by the developed economies. First, given that firms in the United Kingdom constitute 25% of the total sample, we examine whether the exclusion of these firms affects the main results. The results are similar to those reported in Table 4 except for the following. First, the coefficients of *LEV* are positive and significant for only three (out of ten) models. Second, *DISC* and *SMDEV* are not significant in models that contain each of them as the only country-level variable. Third, the coefficient of *LEGAL* is no longer significant when *ACCTG* and *ECON* are also added to the model.

Second, we document results after deleting all developed countries from the sample. To identify developed and developing countries, we use the

[33] One possible explanation for this non-result might be that *COMMON* does not capture the variation in legal enforcement that exists even within the common- and code- law countries. For example, Thailand has a common law origin, but it has low enforcement (*LAW_ENF*=0.48). On the other hand, Sweden has a code-law origin but it has high enforcement (*LAW_ENF*=10).

DEV index as reported in Table 1 of Hail and Leuz [2006]. Specifically, a country is considered as developing if its equity market is not included in the Morgan Stanley Capital International database. Based on this definition, 12 countries are considered as developing, namely: Brazil, Chile, Greece, India, Indonesia, Israel, Malaysia, Mexico, Philippines, South Africa, Taiwan, and Thailand. We re-estimate our models using observations drawn only from these developing economies. The results are reported in Table 7.

The first two models report the regression results for the full sample, using dependent variables *SPEC* and *SPEC1*, while the last two models report the regression results for the same dependent and explanatory variables, using a sample that includes only clients in developing countries. Although sample size decreases dramatically in models 3 and 4 (7,511 observations versus 39,053), the results for firms in developing countries are remarkably similar to those in models 1 and 2. This shows that the characteristics of clients that choose industry specialists from among the Big N auditors do not vary systematically between developed and developing countries. In untabulated results, we include the nine country-level variables in the models that are estimated using only clients from developing countries. Our results indicate that the coefficient estimates for *LSALE*, *LEV*, *MB*, and *CAPINT* continue to be significant. For the country-level variables, only *VOTING*, *SMDEV*, and *LEGAL* are positive and significant.

[Insert Table 7 here]

5. Conclusion

In this study, we investigate client choice of industry specialist auditors, from among the Big N, in an international (non-U.S.) setting. We investigate client-, industry-, and country-level factors hypothesized to enhance or decrease client demand for audits by auditors having industry expertise. We measure auditors' industry expertise based on industry market shares in clients' home countries. Using data for 29 countries and 14 industries from 1993-2005, we find strong evidence that international client choice of Big N industry specialist auditors is positively associated with client size, client growth opportunities, and client capital intensity. At the country level, the choice of industry specialists among Big N auditors is strongly associated with legal environment, quality of financial reporting, and with national economic development. Our results also suggest, less strongly, that choice of industry specialists from among the Big N auditors is higher in regulated industries. Our results are generally robust to several sensitivity tests.

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TABLE 1
Distribution of Sample Firms by Country, Year, and Industry

Panel A: Sample distribution by country

Country	No. of firm-years	Percent of Firms represented in the sample	Percent of firms audited by Big N
Australia	2,097	5.37	78.61
Austria	149	0.38	47.70
Belgium	232	0.59	62.50
Brazil	641	1.64	82.98
Canada	3,970	10.17	91.41
Chile	253	0.65	87.68
Denmark	773	1.98	83.30
Finland	529	1.35	72.55
France	2,059	5.27	42.38
Germany	2,667	6.83	46.54
Greece	70	0.18	36.30
Hong Kong	593	1.52	87.71
India	136	0.35	8.96
Indonesia	182	0.47	45.65
Israel	81	0.21	56.09
Italy	979	2.51	91.81
Malaysia	3,341	8.56	65.27
Mexico	228	0.58	75.25
Netherland	1,296	3.32	91.21
Norway	659	1.69	92.24
Philippines	112	0.29	23.78
Singapore	2,405	6.16	86.02
South Africa	388	0.99	87.62
Spain	586	1.50	90.94
Sweden	1,682	4.31	80.63
Switzerland	1,107	2.83	77.30
Taiwan	1,234	3.16	77.30
Thailand	845	2.16	39.25
United kingdom	9,759	24.99	80.30
Total	39,053	100.00	

TABLE 1 (continued)

Panel B: Sample distribution by year

Year	No. of Firm-years	Percent of firm-years represented in sample
1993	1,340	3.43
1994	1,565	4.01
1995	2,045	5.24
1996	2,446	6.26
1997	3,227	8.26
1998	3,820	9.78
1999	4,041	10.35
2000	3,943	10.10
2001	3,782	9.68
2002	3,694	9.46
2003	3,597	9.21
2004	3,620	9.27
2005	1,933	4.95
	39,053	100.00

Panel C: Sample distribution by industry

Industry	No. of Firm-years	Percent of firm-years represented in sample
Agriculture	321	0.82
Chemicals	929	2.38
Computers	3,894	9.97
Durable manufacturers	11,230	28.76
Extractives	1,170	3.00
Financial institutions	594	1.52
Food	2,102	5.38
Mining & construction	2,756	7.06
Pharmaceuticals	540	1.38
Retail	4,658	11.93
Services	3,513	9.00
Textile & printing/publishing	3,734	9.56
Transportation	2,718	6.96
Utilities	894	2.29
Total	39,053	100.00

The sample consists of 39,053 client firm-years for 29 countries over the period 1993-2005. The sample only includes clients audited by the Big N. Panels A and B show the distribution of observations by country and year respectively. Panel C shows the distribution of observations by industry. Following Frankel et al. (2002), industry membership is determined by the SIC code as follows: agriculture (0100–0999), mining & construction (1000–1999, excluding 1300–1399), food (2000–2111), textiles & printing/publishing (2200–2799), chemicals (2800–2824, 2840–2899), pharmaceuticals (2830–2836), extractive (2900–2999, 1300–1399), financial institutions (6000–6999), durable manufacturers (3000–3999, excluding 3570–3579 and 3670–3679), transportation (4000–4899), utilities (4900–4999), retail (5000–5999), services (7000–8999, excluding 7370–7379), computers (3570–3579, 3670–3679, 7370–7379).

TABLE 2
Means for Firm- and Industry Level Explanatory Variables and Country-Level Index Values

Panel A: Mean firm- and industry level variables

Country	SPEC	SALE	LEV	MB	CAPINT	ISSUE	LOSS	HINDEX	REGIND
Australia	0.40	1,233	0.15	2.27	1.63	0.31	0.22	0.20	0.02
Austria	0.53	2,796	0.10	1.08	1.74	0.25	0.13	0.15	0.00
Belgium	0.32	12,582	0.13	5.41	0.73	0.33	0.25	0.26	0.00
Brazil	0.67	4,421	0.16	4.19	1.93	0.31	0.25	0.10	0.15
Canada	0.45	1,383	0.17	2.33	2.81	0.41	0.27	0.15	0.07
Chile	0.62	77,143	0.13	9.20	1.85	0.19	0.15	0.24	0.23
Denmark	0.59	4,609	0.16	2.12	0.79	0.23	0.20	0.18	0.02
Finland	0.54	4,173	0.15	2.12	0.55	0.29	0.20	0.23	0.00
France	0.26	9,520	0.14	2.44	0.65	0.28	0.21	0.14	0.03
Germany	0.46	5,421	0.09	2.18	0.87	0.25	0.28	0.15	0.04
Greece	0.44	41,559	0.14	3.06	0.80	0.43	0.06	0.15	0.00
Hong Kong	0.46	4,408	0.09	1.50	1.43	0.25	0.26	0.22	0.14
India	0.01	15,064	0.13	4.78	0.60	0.39	0.03	0.10	0.04
Indonesia	0.36	95,713	0.07	9.32	1.54	0.37	0.41	0.24	0.08
Israel	0.16	308	0.06	3.86	0.53	0.42	0.42	0.35	0.00
Italy	0.41	13,993	0.13	8.73	1.16	0.22	0.23	0.24	0.09
Malaysia	0.30	572	0.08	1.64	1.59	0.24	0.26	0.09	0.02
Mexico	0.45	20,370	0.20	4.27	1.40	0.41	0.16	0.21	0.14
Netherland	0.45	3,135	0.13	3.75	0.58	0.30	0.17	0.25	0.03
Norway	0.49	4,913	0.19	2.70	1.68	0.36	0.29	0.33	0.04
Philippines	0.46	6,302	0.13	1.45	8.13	0.23	0.41	0.28	0.01
Singapore	0.41	405	0.09	1.70	1.20	0.26	0.26	0.14	0.03
South Africa	0.54	6,488	0.07	2.14	0.85	0.45	0.12	0.15	0.00
Spain	0.66	28,100	0.12	2.91	1.37	0.34	0.07	0.19	0.06
Sweden	0.41	13,001	0.12	2.29	0.98	0.36	0.32	0.19	0.03
Switzerland	0.42	2,604	0.16	2.27	1.12	0.25	0.14	0.21	0.11
Taiwan	0.36	25,887	0.12	1.77	1.06	0.33	0.20	0.08	0.01
Thailand	0.31	6,466	0.11	1.67	1.66	0.29	0.20	0.15	0.02
United Kingdom	0.45	1,477	0.12	3.20	1.06	0.29	0.21	0.10	0.04

TABLE 2 (continued)

Panel B: Country level variables

Country	LAW_ENF	VOTING	LEGAL	DISC	FIN_TAX	ACCTG	GDP	SMDEV	ECON
Australia	9.51	4	1.03	80	1	0.05	20,222	1.04	0.66
Austria	9.36	2	0.00	62	-	-	21,073	0.14	-0.26
Belgium	9.44	0	-0.94	68	0	-0.24	21,479	0.86	0.51
Brazil	6.13	3	-0.60	56	1	2.19	3,389	0.29	-1.15
Canada	9.75	5	1.60	75	1	0.50	18,473	0.51	0.06
Chile	6.52	5	0.50	78	-	-	4,822	0.92	-0.28
Denmark	10	2	0.22	75	1	0.50	28,272	0.56	0.35
Finland	10	3	0.71	83	0	-1.58	18,650	0.32	-0.15
France	8.68	3	0.26	78	0	-1.13	20,148	0.45	0.04
Germany	9.05	1	-0.59	67	0	-0.15	21,310	0.36	-0.03
Greece	6.82	2	-0.86	61	-	-	12,420	0.58	-0.11
Hong Kong	8.91	5	1.31	73	1	0.68	22,107	2.48	2.23
India	5.58	5	0.18	61	1	1.75	395	0.33	-2.34
Indonesia	2.9	2	-2.18		-	-	736	0.28	-2.03
Israel	7.72	3	-0.07	74	-	-	18,311	0.40	-0.07
Italy	7.07	1	-1.26	66	0	-0.06	16,303	0.13	-0.42
Malaysia	7.72	4	0.42	79	-	-	3,393	2.82	1.53
Mexico	5.37	1	-1.83	71	-	-	5,531	0.26	-0.91
Netherland	10	2	0.22	74	1	0.59	21,154	1.13	0.78
Norway	10	4	1.19	75	1	0.50	31,325	0.19	0.02
Philippines	3.47	3	-1.50	64	-	-	952	0.66	-1.48
Singapore	8.93	4	0.83	79	1	0.14	20,842	1.35	1.01
South Africa	6.45	5	0.48	79	1	0.14	2,876	1.51	0.04
Spain	7.14	4	0.23	72	0	-0.59	14,511	0.84	0.26
Sweden	10	3	0.71	83	0	-1.58	20,837	0.47	0.08
Switzerland	10	2	0.22	80	0	-1.31	31,168	1.39	1.28
Taiwan	7.4	3	-0.17	58	-	-	12,662	1.03	0.39
Thailand	4.89	2	-1.51	66	-	-	2,134	0.67	-1.01
United Kingdom	9.22	5	1.42	85	1	-0.40	21,609	1.33	1.01

TABLE 2 (continued)

Definitions of variables:

SPEC	=	1 if client *j* purchases audits from the auditor having at least 20%/24%/30% market share (for the period prior to 1998, 1998-2001, and after 2001 respectively) in industry *k* in the national market, and 0 otherwise;
SALE	=	sales in millions US$;
LEV	=	long-term debt to assets ratio;
MB	=	Market-to-book ratio;
CAPINT	=	gross property plant and equipment divided by sales.
ISSUE	=	1 if the annual change in equity is greater than 15% and 0 otherwise;
LOSS	=	1 if net income is negative and 0 otherwise;
HINDEX	=	$\sum_{j=1}^{n} s_j^2$ where S_j is market share of firm j based on sales in industry k;
REGIND	=	1 if client *j* is in operating in regulated industry. Following Francis et al. (1999), regulated industries are defined as the following SIC codes: railroad (4011 and 4100), trucking (4210 and 4213), airlines (4512, 4513, 4522, and 4581), telephone communications (4812 and 4813), electric companies (4911), gas companies (492, 4923, and 4924), personal credit (6141), and insurance (6311);
LAW_ENF	=	mean score of three legal enforcement variables reported in La Porta et al. (1998), and used in Leuz et al. (2003). The three variables are (1) the mean for 1980-1983 of a variable provided by Business International Corp., capturing the efficiency and integrity of the judicial system; (2) the mean for 1982-1995 of a rule of law variable obtained from International Country Risk; and (3) the mean for 1982-1995 of a corruption variable that assesses the corruption in government, obtained from International Country Risk. The law enforcement index values range from zero to ten, with higher scores for greater law enforcement;
VOTING	=	Voting rights index which indicates how easy it is for shareholders to exercise their voting rights. This index ranges from 0 to 5, and is constructed by La Porta et al. (1998). It aggregates the following components of shareholder rights: (1) the ability to vote by mail, (2) the ability to gain control of shares during the shareholders' meeting, (3) the possibility of cumulative voting for directors, (4) the ease of calling an extraordinary shareholders meeting, and (5) the availability of mechanism allowing minority shareholders to make legal claims against the directors. This index ranges from zero to five, with higher scores indicating greater protection of shareholders;
LEGAL	=	principal component extracted from *LAW_ENF*, and *VOTING* via factor analysis;
DISC	=	disclosure level from Saudagaran and Diga (1997, Table 2). The original source is the Center for International Financial Analysis and Research (CIFAR 1995). The higher the number, the higher is the quality of disclosure;
FIN_TAX	=	an indicator variable. It equals 1 if tax accounting and financial reporting diverge and 0 otherwise. This index is constructed by and Hung (2000);
ACCTG	=	principal component extracted from *DISC*, and *FIN_TAX* via factor analysis;
GDP	=	mean real GDP Per Capita (in US$ of year 2000 buying power), over the period 1993-2005. *LGDP* is the natural logarithm of *GDP*;
SMDEV	=	mean values of stock market development measured by stock market capitalization divided by GDP, over the period 1993-2005.
ECON	=	principal component extracted from *LGDP*, and *SMDEV* via factor analysis.

TABLE 3
Correlation Matrices

	SPEC	LSALE	LEV	MB	CAPINT	ISSUE	LOSS	HINDEX	REGIND	LAW_ENF	VOTING	LEGAL	DISC	FIN_TAX	ACCTG	LGDP	SMDEV	ECON
SPEC	1.00																	
LSALE	0.16*	1.00																
LEV	0.07*	0.29*	1.00															
MB	0.00	-0.04*	-0.07*	1.00														
CAPINT	0.01*	-0.03*	0.26*	-0.16*	1.00													
ISSUE	-0.01	0.00	-0.02*	0.18*	-0.10*	1.00												
LOSS	-0.04*	-0.25*	-0.05*	-0.10*	0.05*	-0.16*	1.00											
HINDEX	0.03*	0.13*	0.08*	0.01	0.12*	0.01	0.01	1.00										
REGIND	0.05*	0.12*	0.12*	0.01	0.17*	-0.01	-0.02*	0.17*	1.00									
LAW_ENF	0.05*	-0.12*	0.13*	0.09*	-0.11*	0.04*	0.01	0.15*	-0.01	1.00								
VOTING	0.02*	-0.27*	0.00	0.09*	0.01	0.04*	0.00	-0.32*	0.01	0.16*	1.00							
LEGAL	0.03*	-0.32*	0.05*	0.10*	-0.02*	0.05*	0.02*	-0.22*	0.00	0.47*	0.92*	1.00						
DISC	0.00	-0.32*	-0.02*	0.08*	-0.15*	-0.01	-0.01	-0.29*	-0.04*	0.34*	0.62*	0.63	1.00					
FIN_TAX	0.04*	-0.25*	0.01	0.06*	0.05*	0.03*	-0.01	-0.21*	-0.01	0.16*	0.73*	0.68	0.36*	1.00				
ACCTG	0.04*	-0.01	0.02*	-0.01	0.17*	0.03*	0.02*	0.19*	0.04*	0.04*	0.04*	0.07*	0.58*	0.54*	1.00			
LGDP	0.03*	-0.12*	0.06*	0.06*	-0.19*	0.00	0.05*	0.10*	0.01	0.65*	0.09*	0.29	0.39*	-0.06*	-0.30	1.00		
SMDEV	-0.02*	-0.26*	-0.08*	0.03*	-0.07*	0.00	0.00	-0.25*	-0.01	0.05*	0.45*	0.37	0.60*	0.36*	-0.24	0.23*	1.00	
ECON	-0.03*	-0.30*	-0.09*	0.00	-0.01	-0.04*	-0.01	-0.29*	-0.02*	0.05*	0.43*	0.35*	0.59*	0.48*	-0.15*	0.13*	0.81*	1.00

Notes:

See Table 2 for variable definitions. *LSALE* is the natural logarithm of *SALE*. *LGDP* is the natural logarithm of *GDP*. The full sample for the correlation coefficients is 39,053 client firm-years for 29 countries over the period 1993-2005.

* Significance level of 0.01 (two-tailed).

TABLE 4
Logistic Regression Results Explaining Choice of Big N Industry Audit Specialists:
Dependent variable: SPEC

	Exp. Sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Intercept		-2.666	-1.766	-1.655	-2.785	-1.713	-1.230	-3.444	-1.434	-1.447	-1.524
		(117.17)***	(151.72)***	(283.46)***	(45.23)***	(203.47)***	(162.62)***	(80.05)***	(150.48)***	(209.09)***	(242.84)***
LSALE	+	0.171	0.164	0.181	0.171	0.195	0.171	0.160	0.151	0.158	0.193
		(153.38)***	(172.69)***	(214.72)***	(230.68)***	(243.40)***	(157.87)***	(138.19)***	(129.63)***	(144.11)***	(251.58)***
LEV	+	0.156	0.274	0.132	0.271	-0.015	0.104	0.213	0.391	0.385	0.036
		(1.61)	(5.35)**	(1.17)	(6.08)***	(0.01)	(0.57)	(3.39)*	(11.36)***	(11.24)***	(0.06)
MB	+	0.005	0.004	0.005	0.005	0.003	0.003	0.005	0.004	0.005	0.003
		(27.64)***	(18.12)***	(26.36)***	(26.32)***	(10.39)***	(10.39)***	(22.23)***	(16.97)***	(22.20)***	(12.94)***
CAPINT	+	0.012	0.009	0.011	0.011	0.013	0.011	0.012	0.010	0.010	0.012
		(17.17)***	(11.23)***	(14.38)***	(17.50)***	(15.82)***	(13.75)***	(16.44)***	(12.38)***	(14.03)***	(16.38)***
ISSUE	+	-0.038	-0.044	-0.049	-0.031	-0.068	-0.065	-0.035	-0.034	-0.025	-0.062
		(1.71)	(2.41)	(2.97)*	(1.11)	(5.22)**	(4.59)**	(1.42)	(1.32)	(0.72)	(4.47)**
LOSS	?	0.032	0.029	0.046	0.047	0.123	0.089	0.020	0.015	0.026	0.120
		(0.70)	(0.61)	(1.61)	(1.75)	(10.20)***	(4.94)**	(0.28)	(0.16)	(0.46)	(9.68)***
HINDEX	-	-0.091	0.221	0.197	0.112	-0.163	-0.345	-0.122	0.054	0.101	-0.225
		(0.25)	(1.37)	(1.16)	(0.37)	(0.77)	(3.51)*	(0.43)	(0.08)	(0.29)	(1.48)
REGIND	+	0.218	0.179	0.178	0.201	0.116	0.118	0.213	0.194	0.194	0.091
		(9.99)***	(6.86)***	(6.55)***	(8.46)***	(2.57)*	(2.81)*	(9.62)***	(7.96)***	(8.11)***	(1.64)
LAW_ENF	+	0.142									
		(35.37)***									
VOTING	+		0.095								
			(13.56)***								
LEGAL	+			0.230							0.079
				(39.60)***							(2.79)*
DISC	+				0.017						
					(11.29)***						
FIN_TAX	+					0.404					
						(22.24)***					
ACCTG	+						0.175				0.204
							(11.38)***				(15.50)***
LGDP	+							0.216			
								(31.71)***			
SMDEV	+								0.091		
									(2.67)*		
ECON	+									0.113	0.164
										(5.44)**	(6.32)***
χ_2 stat		355.86***	355.73***	444.40***	436.33***	496.26***	338.91***	330.73***	285.28***	581.16***	542.55***
N		39,053	39,053	39,053	38,871	32,558	32,558	39,053	39,053	32,558	32,558

TABLE 4 (continued)

Notes:

$SPEC_{jk}$ equals 'one' if client *j*, headquartered in nation *l* purchases audits from the auditor having at least 20%/24%/30% market share (for the period prior to 1998, 1998-2001, and after 2001 respectively) in industry *k* in the national market. $SPEC_{jk}$ is defined as 'zero' otherwise. See Table 2 for other variable definitions. *LSALE* is the natural logarithm of *SALE*. *LGDP* is the natural logarithm of *GDP*.

We report the Wald statistic in the parenthesis. */**/*** Significance level of 0.1, 0.05 or 0.01 (two-tailed) respectively.

TABLE 5
Logistic Regression Results Explaining Choice of Big N Industry Audit Specialists:
Dependent variable: SPEC1

	Exp. Sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Intercept		-3.011	-2.230	-2.167	-2.681	-2.244	-1.838	-3.853	-2.062	-2.059	-2.086
		(141.90)***	(225.30)***	(370.46)***	(59.25)***	(267.90)***	(282.85)***	(80.79)***	(362.71)***	(401.59)***	(346.50)***
LSALE	+	0.146	0.138	0.152	0.143	0.159	0.139	0.138	0.132	0.139	0.157
		(134.79)***	(152.37)***	(173.70)***	(157.18)***	(157.64)***	(105.51)***	(137.21)***	(146.57)***	(161.74)***	(163.85)***
LEV	+	0.203	0.311	0.194	0.293	0.049	0.149	0.239	0.401	0.392	0.097
		(2.36)	(6.08)***	(2.24)	(5.88)***	(0.12)	(1.05)	(3.82)**	(10.11)***	(9.89)***	(0.43)
MB	+	0.004	0.003	0.004	0.004	0.003	0.001	0.004	0.003	0.004	0.003
		(25.22)***	(15.58)***	(22.77)***	(20.53)***	(9.74)***	(2.85)*	(21.25)***	(16.30)***	(20.90)***	(8.49)***
CAPINT	+	0.010	0.008	0.009	0.009	0.009	0.008	0.010	0.008	0.009	0.009
		(14.95)***	(9.30)***	(11.77)***	(12.68)***	(11.16)***	(8.62)***	(14.91)***	(10.85)***	(12.19)***	(10.59)***
ISSUE	+	-0.017	-0.022	-0.025	-0.009	-0.024	-0.023	-0.015	-0.015	-0.005	-0.019
		(0.39)	(0.66)	(0.85)	(0.10)	(0.65)	(0.55)	(0.28)	(0.30)	(0.03)	(0.39)
LOSS	?	0.057	0.052	0.066	0.069	0.139	0.112	0.049	0.046	0.056	0.450
		(2.15)	(1.75)	(2.99)*	(3.36)*	(12.74)***	(7.57)***	(1.49)	(1.37)	(2.06)	(5.72)**
HINDEX	-	0.429	0.654	0.642	0.573	0.504	0.369	0.396	0.554	0.598	0.450369
		(5.93)**	(13.49)***	(13.57)***	(10.95)***	(7.27)***	(3.86)**	(4.95)**	(10.31)***	(11.85)***	(5.72)**
REGIND	+	0.142	0.114	0.111	0.134	0.073	0.073	0.140	0.117	0.119	0.048
		(4.91)**	(3.23)*	(2.99)*	(4.49)**	(1.13)	(1.12)	(4.75)**	(3.55)*	(3.56)*	(0.51)
LAW_ENF	+	0.116									
		(23.72)***									
VOTING	+		0.069								
			(8.06)***								
LEGAL	+			0.178							0.062
				(22.99)***							(2.94)*
DISC	+				0.009						
					(4.32)**						
FIN_TAX	+					0.339					
						(15.54)***					
ACCTG	+						0.150				0.179
							(10.06)***				(12.59)***
LGDP	+							0.197			
								(21.43)***			
SMDEV	+								0.111		
									(5.14)**		
ECON	+									0.124	0.145
										(8.08)***	(6.97)***
χ_2 stat		236.47***	242.92***	266.91***	237.30***	291.74***	234.98***	237.17***	242.52***	268.75***	329.61***
N		39,053	39,053	39,053	38,871	32,558	32,558	39,053	39,053	39,053	32,558

Notes:

$SPEC1_{jk}$ equals 'one' if client *j*, headquartered in nation *l*, purchases audits from the auditor having the largest value of *ADTR_MS* in industry *k* in nation *l*. $SPEC1_{jk}$ is defined as 'zero' otherwise. See Table 2 for definitions of other variables. *LSALE* is the natural logarithm of *SALE*. *LGDP* is the natural logarithm of *GDP*.

We report the Wald statistic in the parenthesis. */**/*** Significance level of 0.1, 0.05 or 0.01 (two-tailed) respectively.

TABLE 6
Logistic Regression Results Explaining Choice of Big N Industry Audit Specialists:
Dependent variable: SPEC (Removing clients cross-listed in the U.S.)

	Exp. Sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Intercept		-2.538	-1.651	-1.543	-2.611	-1.596	-1.079	-3.301	-1.297	-1.307	-1.376
		(95.91)***	(122.74)***	(216.55)***	(39.42)***	(166.99)***	(119.28)***	(70.47)***	(116.03)***	(161.52)***	(184.27)***
LSALE	+	0.156	0.147	0.166	0.156	0.178	0.152	0.145	0.134	0.140	0.173
		(115.34)***	(125.43)***	(160.35)***	(170.08)***	(181.08)***	(113.64)***	(100.49)***	(93.18)***	(103.99)***	(180.56)***
LEV	+	0.149	0.272	0.121	0.278	-0.003	0.116	0.212	0.394	0.389	0.057
		(1.39)	(4.94)**	(0.91)	(6.13)***	(0.01)	(0.67)	(3.22)*	(11.10)***	(11.06)***	(0.15)
MB	+	0.005	0.004	0.005	0.005	0.003	0.001	0.005	0.004	0.004	0.003
		(19.71)***	(13.00)***	(19.23)***	(19.25)***	(6.55)***	(1.59)	(15.90)***	(11.86)***	(15.50)***	(7.30)***
CAPINT	+	0.011	0.008	0.009	0.010	0.011	0.010	0.011	0.008	0.009	0.011
		(14.36)***	(8.65)***	(11.71)***	(14.33)***	(13.03)***	(10.51)***	(13.64)***	(9.57)***	(10.83)***	(13.13)***
ISSUE	+	-0.045	-0.051	-0.056	-0.037	-0.071	-0.068	-0.040	-0.039	-0.030	-0.065
		(2.24)	(2.98)*	(3.79)**	(1.47)	(5.34)**	(4.70)**	(1.83)	(1.62)	(1.05)	(4.53)**
LOSS	?	0.010	0.008	0.025	0.026	0.104	0.067	-0.001	-0.007	0.002	0.099
		(0.07)	(0.04)	(0.49)	(0.53)	(7.51)***	(2.82)*	(0.01)	(0.04)	(0.00)	(6.73)***
HINDEX	-	-0.273	0.044	0.025	-0.066	-0.359	-0.575	-0.308	-0.137	-0.088	-0.439
		(2.20)	(0.05)	(0.02)	(0.12)	(3.90)**	(10.12)***	(2.73)*	(0.51)	(0.22)	(5.94)**
REGIND	+	0.165	0.129	0.129	0.155	0.065	0.058	0.165	0.146	0.146	0.038
		(5.19)**	(3.28)*	(3.09)*	(4.60)**	(0.72)	(0.61)	(5.17)**	(4.13)**	(4.20)**	(0.26)
LAW_ENF	+	0.141									
		(32.31)***									
VOTING	+		0.097								
			(13.61)***								
LEGAL	+			0.234							0.073
				(38.16)***							(3.36)*
DISC	+				0.017						
					(10.49)***						
FIN_TAX	+					0.418					
						(23.44)***					
ACCTG	+						0.196				0.222
							(14.13)***				(18.04)***
LGDP	+							0.214			
								(30.45)***			
SMDEV	+								0.083		
									(2.20)		
ECON	+									0.100	0.167
										(4.19)**	(6.45)***
χ_2 stat		258.29***	249.07***	313.99***	309.45***	362.25***	255.89***	227.52***	199.77***	227.94***	385.42***
N		36,934	36,934	36,934	36,752	30,604	30,604	36,934	36,934	36,934	30,604

Notes:

We delete 2,119 client firm-years, relating to those clients that cross-list their shares in the U.S. market, since the firms' auditor choice may be related to their overseas equity issues. See Table 2 for definitions of the variables. *LSALE* is the natural logarithm of *SALE*. *LGDP* is the natural logarithm of *GDP*.

We report the Wald statistic in the parenthesis. */**/*** Significance level of 0.1, 0.05 or 0.01 (two-tailed) respectively.

TABLE 7
Logistic Regression Results Explaining Choice of Big N Industry Audit Specialists:
Full Sample versus Developing Countries

		Full Sample		Developing Countries	
	Exp. Sign	Model 1 DV=SPEC	Model 2 DV=SPEC1	Model 3 DV=SPEC	Model 4 DV=SPEC1
Intercept		-1.289 (149.18)***	-1.886 (303.87)***	-1.876 (12.05)***	-2.339 (69.20)***
LSALE	+	0.146 (109.15)***	0.126 (107.67)***	0.155 (36.21)***	0.155 (35.41)***
LEV	+	0.380 (10.80)***	0.388 (9.41)***	0.630 (6.07)***	0.896 (9.36)***
MB	+	0.004 (14.27)***	0.003 (12.74)***	0.007 (45.35)***	0.004 (20.65)***
CAPINT	+	0.009 (11.61)***	0.008 (9.60)***	0.013 (3.75)**	0.017 (6.15)***
ISSUE	+	-0.034 (1.33)	-0.015 (0.30)	0.066 (1.50)	-0.031 (0.29)
LOSS	?	0.008 (0.04)	0.037 (0.85)	-0.207 (5.88)**	-0.237 (5.11)**
HINDEX	-	0.020 (0.01)	0.519 (8.53)***	0.872 (1.65)	0.389 (0.50)
REGIND	+	0.209 (9.58)***	0.136 (4.61)**	0.556 (6.56)***	0.494 (8.54)***
χ^2 stat		256.41***	236.46***	163.58***	113.53***
N		39,053	39,053	7,511	7,511

Notes:

See Tables 2 and 5 for variable definitions. In models 3 and 4 the sample only includes firms in the developing countries. Countries are considered as developing if the country's equity market is not included in the Morgan Stanley Capital International database (Hail and Leuz [2006] Table 1). Based on this definition, 12 countries are included in models 3 and 4, namely, Brazil, Chile, Greece, India, Indonesia, Israel, Malaysia, Mexico, Philippines, South Africa, Taiwan, and Thailand. Models 1 and 2 provide results using the full sample.

We report the Wald statistic in the parenthesis. */**/*** Significance level of 0.1, 0.05 or 0.01 (two-tailed) respectively.