The Joint Effect of Investor Protection and Big 4 Audits on Earnings Quality around the World*

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1. Introduction

We examine whether earnings quality is jointly affected by the investor protection environment where a firm is located and the firm's choice of a Big 4 versus non–Big 4 auditor. At issue is whether there are any differences in earnings quality in countries around the world due solely to differences in investor protection regimes, or if differential audit quality measured by the well-known Big 4/non–Big 4 dichotomy plays a role in mediating how investor protection regimes affect earnings quality.[1] The role of auditing is to enforce the application of proper accounting polices. Managers prefer discretion in the reporting process, and auditors may go along with earnings management behavior and the reporting of low quality earnings in order to avoid dismissal by clients. However, auditor incentives change as investor protection regimes become stricter, and there is a greater likelihood that client misreporting is detected and auditors are punished. Our conjecture is that Big 4 auditors are more sensitive to the cost of client misreporting and its effect on auditor reputation and are more likely to enforce higher earnings quality as investor protection regimes become stronger. In contrast, non–Big 4 auditors are less affected because they have less reputation capital at risk and therefore are less likely to risk client dismissal by enforcing a higher level of earnings quality.

Three properties of earnings that have been widely used in prior earnings quality studies are investigated: the magnitude of signed abnormal accruals (Frankel, Johnson, and Nelson 2002); the likelihood of reporting a loss (Burgstahler and Dichev 1997); and earnings conservatism using the timely loss recognition framework of Basu 1997 and Ball, Kothari, and Robin 2000. All three earnings measures capture aspects of accounting conservatism in the sense that earnings are implicitly more conservative ceteris paribus if losses are reported, if signed abnormal accruals are income-decreasing, and if earnings are conservative using the Basu 1997 framework. For a large sample of firms from 42 countries over the period 1994–2004 we find that earnings quality is higher as the country's investor protection

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regime becomes stronger, but only for firms with Big 4 auditors. Specifically, signed abnormal accruals are smaller (income-decreasing) and the likelihood of a loss is greater as the investor protection environment becomes stronger. In contrast, for clients of non–Big 4 auditors, abnormal accruals and the likelihood of reporting a loss are unaffected by differences in investor protection regimes. Tests using the Basu 1997 framework are consistent with these results and show that earnings conservatism is increasing in the strictness of a country's investor protection environment, but only for firms audited by Big 4 auditors. We conclude that the role of investor protection on earnings quality around the world is mediated by the incentives of Big 4 auditors to enforce higher earnings quality as investor protection regimes become stricter.

Prior research documents greater financial transparency in countries with stronger investor protection regimes (Bhattacharya, Daouk, and Welker 2003; Bushman, Piotroski, and Smith 2004), and there is evidence that earnings are less managed and more value-relevant in these countries (for example, Ball et al. 2000; Hung 2000; Leuz, Nanda, and Wysocki 2003). Our study makes a distinctive contribution to the comparative accounting literature by showing that stronger investor protection regimes per se do not appear to affect the properties of accounting earnings without also considering the quality of enforcement by Big 4 and non–Big 4 auditors.

The remainder of the paper is organized as follows. The role of auditing and investor protection on earnings quality is further developed in the next section. Investor protection variables are defined in section 3. The sample and models are presented in section 4. Primary results are reported in section 5, and sensitivity analyses and robustness tests are reported in section 6. The study concludes in section 7.

2. The role of auditing and investor protection on earnings quality

There is evidence that earnings of U.S. companies with Big 4 auditors are of higher quality and that the stock market values earnings surprises of Big 4 clients more highly than earnings surprises of firms with non–Big 4 auditors (Teoh and Wong 1993; Krishnan 2003a). An explanation for this is that Big 4 clients have smaller abnormal accruals, which is consistent with Big 4 auditors constraining aggressive earnings management, thereby resulting in more credible earnings announcements (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis, Maydew, and Sparks 1999; Krishnan 2003b). Another reason investors have greater confidence in the reported earnings of Big 4 clients is that Big 4 auditors are more likely to issue going-concern warnings than non–Big 4 auditors for the same set of client circumstances (Francis and Krishnan 1999, 2002).

Why do earnings properties of U.S. companies differ systematically for companies with Big 4 and non–Big 4 auditors? The standard explanation is that Big 4 auditors in the United States impose a high level of earnings quality in order to protect their brand name reputation from legal exposure and reputation risk, which can arise from misleading financial reports by clients and, in particular, from overly optimistic earnings reports (DeAngelo 1981). If this explanation is correct then we should observe similar outcomes in other countries with strong investor

protection (Newman, Patterson, and Smith 2005). Therefore the research question we investigate is whether the earnings properties of Big 4 clients observed in the United States also exist in other countries.

There are three alternative scenarios regarding Big 4 behavior around the world. The first possibility is that Big 4 behavior in the United States is unique and stems from what the accounting profession has called the excessive litigation environment faced by U.S. auditors (Arthur Andersen, Coopers & Lybrand, Deloitte Touche, Ernst & Young, KPMG Peat Marwick, and Price Waterhouse 1992). The profession used these claims in the early 1990s to lobby successfully for litigation relief and the passage of the Private Securities Litigation Reform Act of 1995. Under this viewpoint, one would not expect to observe in other countries the kind of Big 4 behavior that occurs in the United States. In other words, the U.S. legal environment is an extreme outlier and the risk-management behavior observed in the United States leads to a unique level of earnings quality and accounting conservatism relative to other countries.

A second viewpoint is that Big 4 accounting firms are international organizations with global operations and, therefore, have incentives to develop and maintain uniform reputations around the world (Simunic and Stein 1987). This is achieved through standardized staff training and knowledge-sharing practices, and the global application of uniform audit methodologies. Under this perspective one would expect to observe consistent Big 4 behavior in the treatment of their clients around the world with respect to earnings quality and accounting conservatism.

While plausible, we believe the above two scenarios are less likely than a third perspective that draws on recent research documenting cross-country differences in legal institutions and investor protection, and their effects on accounting practices (La Porta, Lopez-de-Silanes, Shleifer, and Vishney 1998, 2000; La Porta, Lopez-de-Silanes, and Shleifer 2006).[2] Under this view, Big 4 behavior with respect to client earnings is neither uniform around the world, nor unique to the United States, but instead varies systematically with incentives in different institutional environments.[3] We conjecture that Big 4 auditors impose higher earnings quality through greater accounting conservatism on clients' financial reports as a rational response to stricter investor protection regimes, including the ability of investors to sue auditors for negligence and the power of regulators to sanction auditors for misconduct. In contrast, non–Big 4 auditors do not have the same reputation capital at risk as Big 4 firms and therefore do not have as strong an incentive to enforce higher earnings quality and risk dismissal by clients.

To elaborate, we assume that clients prefer auditors who will allow some discretion in the reporting of earnings and that auditors are willing to go along with such behavior to some degree in order to avoid dismissal. However, non–Big 4 auditors have less to lose than Big 4 auditors in accommodating clients and signing off on earnings that are of inherently lower quality, even in countries with stricter investor protection regimes where low earnings quality may be detected and punished. In other words, the cost–benefit calculus is such that a non–Big 4 auditor has more to gain by appeasing clients on questionable accounting policies, while a Big 4 auditor has more reputation capital at risk and therefore is less likely to go

along with clients as the investor protection regimes becomes stricter. It follows that when investor protection is very low, the incentives for both groups of auditors are similar, in which case there may be no observable differences in earnings quality between Big 4 and non–Big 4 clienteles.

Before proceeding, we contrast our study with a concurrent paper by Choi, Kim, Liu, and Simunic 2008. Choi et al. report evidence from 13 countries that Big 4 audit fees are higher than the fees of non–Big 4 auditors around the world, but the Big 4 premium decreases relative to non–Big 4 firms as legal regimes become stronger (stricter) and create greater litigation risk for auditors. Although their study only examines audit fees, higher fees imply higher quality audits, so at face value, the results suggest that Big 4 audits are clearly of higher quality relative to non–Big 4 audits in "weak" legal regimes; however, in "stronger" regimes there is less of a quality differentiation between the two groups of auditors.

Thus the results in Choi et al. 2008 appear to be the opposite of our study with respect to Big 4 audit quality. Specifically, we find no differences in the quality of client earnings of Big 4 and non–Big 4 auditors in weak legal regimes, whereas the earnings of Big 4 clients are increasing in quality (more conservative) relative to non–Big 4 auditors as legal regimes become stronger. Thus our results imply that the "gap" in audit quality between Big 4 and non–Big 4 firms increases rather than decreases with the strictness of legal regimes. Even though the two studies seem to reach opposite conclusions, it is important to note that we examine client earnings characteristics, while Choi et al. (2008) examine audit fees, so the two studies are not directly comparable. Further, neither study directly observes audit effort or the auditor's judgement and decision-making process. The contrasting implications of the two studies indicate the need for further investigation to better understand the effects of legal regimes and investor protection environments on auditing practices around the world.[4]

3. Investor protection variables

Our study examines whether the quality of reported earnings improves as a country's investor protection environment becomes stronger. Lower earnings quality is less likely to occur in countries with stronger investor protection because enforcement is better in such countries and there are greater consequences for auditors whose clients misreport in terms of civil and criminal liability and other punishment and sanctions imposed by regulatory agencies. We use multiple investor protection measures because there are multiple dimensions to the concept of investor protection and because country-level metrics are likely to have measurement error. The testing of multiple variables is common in cross-country research and gives greater confidence when results are consistent across variables.

La Porta et al. (2006) articulate a general framework in which investor protection operates through a county's legal tradition, corporate law, and securities law. A country's underlying legal tradition is the foundation that defines basic legal rights, including the protection of property rights, and is also the lens through which corporate law and securities law are developed. Legal scholars classify legal traditions into two general families, common law and civil or code law (David and Brierly

1985). England developed the common-law tradition that is characterized by relatively less reliance on statutes and a preference for contracts and private litigation to resolve disputes. In contrast, the civil- or code-law tradition is associated with France and other European countries and is characterized by greater reliance on explicit laws and procedural codes and a preference for state regulation over private litigation to resolve disputes. Prior research shows that the common-law legal tradition provides greater investor protection than does the civil- (code-) law tradition because of its stronger orientation to private contracting and the protection of private property rights (La Porta et al. 1998).

Therefore our first investor protection variable is *LAW* and is coded one for countries with a common-law legal tradition. Wingate (1997) reports anecdotal evidence based on insurers' malpractice risk assessments that auditors have greater legal exposure in common-law countries than in code-law countries for breach of contract and the tort of negligence if they fail to detect misreporting by clients. Consistent with this view, our prediction is that litigation risk in common-law countries will have a greater effect on Big 4 auditors because of their reputation capital, and this creates an incentive for greater care in audits and the enforcement of higher earnings quality.

A second level of investor protection comes explicitly from corporate law and, in particular, those mechanisms in corporate law that protect the rights of outside (minority) investors and attenuate agency problems between inside (controlling) owners and outside/minority owners. La Porta et al. (1998) develop what they term an antidirector rights' index based on the presence/absence of six specific elements of investor protection in a country's corporate law practices. The six-point index (*ANTI_DIR*) measures how easily outside/minority stockholders can exercise their rights against opportunistic behavior by managers and dominant owners.[5] When minority shareholders have greater legal recourse against opportunistic behavior by majority owners, Big 4 auditors have incentives for a higher standard of care in order to avoid the misreporting of earnings by clients.

The next three variables are based on a country's securities laws such as the Securities Act of 1933 and the Securities and Exchange Act of 1934 in the United States. La Porta et al. (2006) worked with leading securities law attorneys around the world and distilled the protection provided by securities laws to three fundamental factors: disclosure requirements, liability standards, and public enforcement. On the basis of these consultations, La Porta et al. (2006) develop indices that measure a country's disclosure level, liability standard, and public enforcement of securities law. By construction, the indices are continuous variables scaled from zero to one with larger values indicating countries with stronger investor protection regimes.

The disclosure index (*DIS_REQ*) measures the extent to which there is required disclosure of information for firms issuing securities through a prospectus, including information on the compensation of executives, shareholder ownership structure, inside ownership, unusual contracts, and related-party transactions. More disclosure creates greater protection for investors by reducing information asymmetry. The liability index (*LIT_STD*) measures the liability standard for

investors to recover damages from issuers of securities, company directors, investment banks, and auditors when there has been misleading disclosures in the issuance of securities. La Porta et al. (2006) view the liability standard as a measure of the effectiveness of private enforcement through contract law and the burden of proof required to establish damages when there is malfeasance. The derivation of *LIT_STD* specifically incorporates the ease with which investors can sue auditors. In addition to "private enforcement", investors also receive protection through the public enforcement of securities laws by regulatory agencies such as the Securities and Exchange Commission in the United States. La Porta et al. (2006) use the term "supervisor" to refer to the regulatory agency, and the public enforcement index (*PUB_ENF*) is based on supervisor characteristics, rule-making powers, investigative powers, noncriminal sanctions, and criminal sanctions. Stronger investor protection exists when the supervisor has greater investigative authority and the ability to punish firms and auditors that violate securities laws. As with *LIT_STD*, the derivation of *PUB_ENF* specifically incorporates the extent to which auditors can be punished and sanctioned for failing to prevent client misreporting. In sum, as securities laws give greater protection to investors, Big 4 auditors are exposed to greater risks from the consequences of client misreporting and, therefore, are expected to enforce a higher level of earnings quality relative to non–Big 4 auditors.

Table 1, panel A, reports values of the five investor protection variables for each of the 42 countries in the study. There are 15 common-law countries and 27 code-law countries in the sample. The United States has the highest level of investor protection for all five variables. Not surprisingly there is relatively high correlation among the five variables in Table 1, panel B. All pair-wise correlations are positive and significant at the 0.01 level or less, and Spearman correlations range in value from 0.379 to 0.647. The common-law/code distinction has been widely used to measure investor protection in prior research. Although viewed as a simplistic dichotomy, it is associated with other more specific measures of investor protection. In other words, countries with a common-law legal tradition also tend to have stronger investor protection through corporate law and securities law.

4. Sample and research design

The sample and financial data are obtained from the COMPUSTAT Global Industrial and Commercial file for the period 1994–2004. Stock price and earnings per share data are retrieved from the COMPUSTAT Global Issue file for the same period. We exclude firm-year observations with nonfully consolidated financial statements, those not audited, and those with missing values for the dependent and independent variables. Next we keep only those observations in countries with investor legal protection measures for the 49 countries surveyed in La Porta 1998, 2006. We further delete observations from Japan, South Korea, India, and Pakistan because of potential miscoding of the auditor identification variable. These countries report Big 4 auditor rates of close to zero due to the Big 4 practice of operating in these countries through the name of a local affiliate and therefore we have no precise way of determining which firms are audited by Big 4 auditors. Financial institutions (Standard Industrial Classification [SIC] 6000–6999) are also excluded.

TABLE 1
Investor protection in common-law and code-law countries

Panel A: Measures of investor protection and Big 4 auditors' market share for the 42 countries in the study

Country	No. of observations in abnormal accruals analysis	No. of observations in loss avoidance analysis	No. of observations in earnings conservatism analysis	Big 4 market share	*LAW*	*ANTI_DIR*	*DIS_REQ*	*LIT_STD*	*PUB_ENF*
Argentina	83	216	161	74.5%	0	4	0.50	0.22	0.58
Australia	1,943	2,514	2,225	81.6%	1	4	0.75	0.66	0.90
Austria	405	563	409	49.2%	0	2	0.25	0.11	0.17
Belgium	516	748	503	66.2%	0	0	0.42	0.44	0.15
Brazil	569	935	664	88.3%	0	3	0.25	0.33	0.58
Canada	2,989	4,240	3,872	92.4%	1	5	0.92	1	0.80
Chile	492	610	520	88.0%	0	5	0.58	0.33	0.60
Colombia	59	94	70	50.0%	0	3	0.42	0.11	0.58
Denmark	830	1,079	797	92.0%	0	2	0.58	0.55	0.37
Egypt	10	25	27	40.0%	0	2	0.50	0.22	0.30
Finland	675	857	681	76.2%	0	3	0.50	0.66	0.32
France	3,220	4,400	3,544	50.1%	0	3	0.75	0.22	0.77
Germany	2,941	4,253	3,146	47.5%	0	1	0.42	0	0.22
Greece	321	425	290	36.0%	0	2	0.33	0.50	0.32
Hong Kong	776	987	784	87.5%	1	5	0.92	0.66	0.87
Indonesia	1,132	1,555	985	46.2%	0	2	0.50	0.66	0.62
Ireland	318	405	242	89.4%	1	4	0.67	0.44	0.37
Israel	152	283	224	51.9%	1	3	0.67	0.66	0.63
Italy	746	1,339	1,063	92.5%	0	1	0.67	0.22	0.48
Jordan	3	5	7	80.0%	0	1	0.67	0.22	0.60

(The table is continued on the next page.)

TABLE 1 (Continued)

Country	No. of observations in abnormal accruals analysis	No. of observations in loss avoidance analysis	No. of observations in earnings conservatism analysis	Big 4 market share	*LAW*	*ANTI_DIR*	*DIS_REQ*	*LIT_STD*	*PUB_ENF*
Kenya	6	7	0	100.0%	1	3	0.50	0.44	0.70
Malaysia	3,766	4,829	3,704	65.8%	1	4	0.92	0.66	0.77
Mexico	389	561	375	76.1%	0	1	0.58	0.11	0.35
Netherlands	1,101	1,495	1,245	92.1%	0	2	0.50	0.89	0.47
New Zealand	358	455	350	92.5%	1	4	0.67	0.44	0.33
Norway	644	948	719	92.4%	0	4	0.58	0.39	0.32
Peru	80	110	89	72.7%	0	3	0.33	0.66	0.78
Philippines	500	653	498	25.0%	0	3	0.83	1	0.83
Portugal	247	321	220	40.8%	0	3	0.42	0.66	0.58
Singapore	2,015	2,660	2,088	86.6%	1	4	1	0.66	0.87
South Africa	454	683	621	86.1%	1	5	0.83	0.66	0.25
Spain	765	947	737	92.7%	0	4	0.50	0.66	0.33
Sri Lanka	13	17	21	88.2%	1	3	0.75	0.39	0.43
Sweden	1,428	1,890	1,413	84.4%	0	3	0.58	0.28	0.50
Switzerland	1,064	1,428	1,104	76.0%	0	2	0.66	0.44	0.33
Taiwan	928	1,199	1,022	77.7%	0	3	0.75	0.66	0.52
Thailand	1,385	2,088	1,336	40.1%	1	2	0.92	0.22	0.72
Turkey	116	212	163	64.6%	0	2	0.50	0.22	0.63
United Kingdom	7,287	9,215	7,399	81.6%	1	5	0.83	0.66	0.68
United States	17,184	29,852	24,791	93.1%	1	5	1	1	0.90
Venezuela	40	63	43	93.7%	0	1	0.17	0.22	0.55
Zimbabwe	16	27	15	96.3%	1	3	0.50	0.44	0.42

(The table is continued on the next page.)

TABLE 1 (Continued)

Panel B: Spearman correlations of investor protection and Big 4 market share ($n = 42$)

	ANTI_DIR	*DIS_REQ*	*LIT_STD*	*PUB_ENF*	Big 4 market share
LAW	0.574	0.647	0.379	0.389	0.338
	(<0.01)	(<0.01)	(0.01)	(0.01)	(0.03)
ANTI_DIR		0.519	0.515	0.402	0.341
		(<0.01)	(<0.01)	(<0.01)	(0.03)
DIS_REQ			0.408	0.504	0.154
			(<0.01)	(<0.01)	(0.33)
LIT_STD				0.381	0.172
				(0.01)	(0.28)
PUB_ENF					0.023
					(0.88)

Notes:

p-values are in parentheses. *LAW* equals 1 if a country has a common-law tradition and 0 otherwise. *ANTI_DIR* is the antidirector rights' index from La Porta et al. 1998. *DIS_REQ* is the disclosure requirements index from La Porta et al. (2006). *LIT_STD* is the liability standard index from La Porta et al. 2006. *PUB_ENF* is the public enforcement index from La Porta et al. 2006.

Finally, we exclude observations that fall in the top and bottom 1 percent of abnormal accruals, those with the absolute value of studentized residuals greater than three in the abnormal accruals analysis, those in the top and bottom 1 percent of annual returns and earnings per share before extraordinary items, and those with the absolute value of studentized residuals greater than three in the accounting conservatism analysis. After these screens, there are 57,966 observations for the period 1996–2004 in the abnormal accruals analysis, 85,193 observations for the period 1995–2004 in the loss avoidance analysis, and 68,167 observations for the period 1995–2004 in the earnings conservatism analysis.[6] The sample selection process is summarized in Table 2, and details of the three samples and variables used in each of the three tests are reported in Table 3.

The number of firm-year observations for each of the 42 countries is reported in panel A of Table 1 for each of the three analyses in the study. Eight countries have less than 100 firm-year observations, 20 countries have from 100 to 1,000 firm-year observations, and 14 countries have more than 1,000 firm-year observations. A sensitivity analysis shows that the tests are robust to the exclusion of smaller countries. Country-level Big 4 market shares are also reported (Table 1) and there is a wide range from 25 percent in the Philippines to 100 percent for Kenya (6 observations). Overall, the evidence is mixed with respect to the impact of investor protection on Big 4 market shares across countries. Table 1, panel B shows that Big 4 market share is positively related to legal tradition (*LAW*) and to

TABLE 2
Sample selection

Panel A: Abnormal accruals analysis	
No. of observations with no missing values on dependent and independent variables for 1996–2004	81,614
Less no. of observations from countries not on the list of the 49 countries in La Porta et al. 2006	(3,798)
Less no. of observations from Japan, South Korean, India, and Pakistan	(16,095)
Less no. of financial institutions (SIC 6000–6999)	(1,234)
Less no. of top and bottom 1% of abnormal accruals	(1,208)
Less no. of observations with |studentized residuals| > 3	(1,313)
Final no. of observations used in the abnormal accruals tests	57,966
Panel B: Loss avoidance analysis	
No. of observations with no missing values on dependent and independent variables for 1995–2004	117,825
Less no. of observations from countries not on the list of the 49 countries in La Porta et al. 2006	(5,466)
Less no. of observations from Japan, South Korean, India, and Pakistan	(24,979)
Less no. of financial institutions (SIC 6000–6999)	(2,187)
Final no. of observations used in the loss avoidance tests	85,193
Panel C: Earnings conservatism analysis	
No. of observations with no missing values on dependent and independent variables for 1995–2004	103,501
Less no. of observations from countries not on the list of the 49 countries in La Porta et al. 2006	(4,007)
Less no. of observations from Japan, South Korean, India, and Pakistan	(24,597)
Less no. of financial institutions (SIC 6000–6999)	(1,958)
Less no. of top and bottom 1% of earnings per share before extraordinary items and annual returns	(2,781)
Less no. of observations with |studentized residuals| > 3	(1,991)
Final no. of observations used in the earnings conservatism tests	68,167

antidirectors' right index (*ANTI_DIR*), which means that we observe more Big 4 audits when investor protection is stronger as measured by these two variables. However, none of the three securities law variables (*DIS_REQ*, *LIT_STD*, *PUB_ENF*) is associated with Big 4 market share.

Signed abnormal accruals analysis

The first analysis tests whether signed abnormal accruals differ across countries as a function of investor protection regimes and whether there is a mediating Big 4 auditor effect. Larger abnormal (unexpected) accruals imply greater managerial opportunism and earnings of lower quality. We conjecture there are smaller abnormal

TABLE 3
Descriptive statistics

Panel A: Abnormal accruals tests (n = 57,966)

Variables	Mean	s.d.	25th percentile	Median	75th percentile
AB_ACCR	−0.011	0.124	−0.070	−0.010	0.046
LSALES	5.357	2.010	4.067	5.367	6.668
CFO	0.067	0.166	0.012	0.082	0.149
LEV	0.541	0.252	0.369	0.540	0.689
GROWTH	0.126	0.386	−0.050	0.069	0.217
Δ*PPE*	0.132	0.356	−0.013	0.071	0.195
LAG_LOSS	0.256	0.436	0	0	1

Panel B: Loss avoidance tests (n = 85,193)

Variables	Mean	s.d.	25th percentile	Median	75th percentile
LOSS	0.274	0.446	0	0	1
LSALES	5.355	2.106	3.990	5.376	6.751
LEV	0.551	0.266	0.374	0.548	0.699
GROWTH	0.201	0.636	−0.043	0.081	0.244

Panel C: Earnings conservatism tests (n = 68,167)

Variables	Mean	s.d.	25th percentile	Median	75th percentile
EARN	0.046	0.160	0.000	0.052	0.103
R	0.101	0.583	−0.252	0.020	0.324
DR	0.479	0.500	0	0	1
LMV	5.439	2.090	3.959	5.379	6.749
LEV	0.513	0.213	0.362	0.530	0.669
MB	3.104	5.844	0.983	1.681	2.967

(The table is continued on the next page.)

TABLE 3 (Continued)

Notes:

AB_ACCR is the signed abnormal accruals. *LSALES* is the natural log of client sales. *CFO* is the operating cash flows scaled by lagged total assets. *LEV* is the ratio of total liabilities to total assets. *GROWTH* is the sales growth rate, defined as the sales in current year minus sales in prior year and divided by sales in prior year. ΔPPE is the growth rate of gross PPE (property, plant, and equipment), defined as the gross PPE in current year minus the gross PPE in prior year and divided by the gross PPE in prior year. *LAG_LOSS* equals 1 if net income before extraordinary items in the prior year is negative and 0 otherwise. *LOSS* equals 1 if net income before extraordinary items in the current year is negative and 0 otherwise. *EARN* is defined as earnings per share before extraordinary items, scaled by stock price at beginning of the period. *R* is the cumulative stock return for the fiscal year. *DR* is a dummy variable and equals 1 if *R* is negative and 0 otherwise. *LMV* is the natural log of market value of equity. *MB* is the market-to-book ratio.

accruals in countries with stronger investor protection regimes because the consequences of misreporting earnings is greater for firms and their auditors in these countries, and Big 4 auditors are expected to be more sensitive to these consequences than non–Big 4 auditors. Signed abnormal accruals are used rather than absolute (unsigned) abnormal accruals for two reasons. First, we are interested primarily in the use of managerial discretion to increase reported earnings because this is the misreporting scenario most likely to damage an auditor's reputation. Second, Hribar and Nichols (2007) report evidence that signed abnormal accruals are a better measure of earnings quality than the absolute or unsigned value of abnormal accruals.

A cross-sectional Jones 1991 model is not practical for the calculation of abnormal accruals with international data. The reason is that the number of industry observations per country can be quite small, and this may explain, at least in part, why Jones-type abnormal accruals perform unreliably in international settings (Wysocki 2004; Meuwissen, Moers, Peek, and Vanstraelen 2005). We avoid this problem by using a linear expectation model adapted from DeFond and Park 2001 that uses a firm's own prior year accruals in calculating the expectation benchmark. Specifically, expected accruals are based on a firm's prior year ratio of current accruals to sales, and the prior year's ratio of deprecation expense to gross property, plant, and equipment (PPE). Another benefit of this approach is that it implicitly controls for cross-country differences in accounting standards by using a firm as its own control to compute abnormal accruals. Therefore abnormal accruals are contextualized relative to the specific accounting standards of a particular country. To illustrate, assume that the ratio of current accruals to sales is 0.15 for a firm in year $t - 1$, based on sales of \$100 and current accruals of \$15 in $t - 1$. If sales in year t are \$120, then predicted current accruals in year t will be \$120 $\times$ 0.15 = \$18. The same procedure is used for predicted depreciation expense, which is based on the prior year's ratio of depreciation expense to gross PPE.

Importantly, note that this model is not a random walk expectation model in which current accruals are simply expected to be the same dollar amount as last year's accruals. Rather, accruals are assumed to have a constant linear relationship over time with sales (for current accruals) and gross PPE (for depreciation) that can be used to predict current period accruals for a given level of sales and gross PPE.[7]

Using data from COMPUSTAT Global Industrial and Commercial file, predicted accruals are calculated as:

Predicted accruals = {[Sales (#1) in year t
× (current accruals in year $t-1$/sales in year $t-1$)]
− [gross PPE (#77) in year t
× (depreciation in year $t-1$ (#11 − #13)/gross PPE in year $t-1$ (#77)]}/total assets (#89) in year $t-1$.[8]

Abnormal accruals are defined as the firm's actual total accruals in year t, minus predicted total accruals for year t as defined above. Total accruals in year t are calculated as follows using data from the COMPUSTAT Global Industrial and Commercial file:

Total accruals = (Earnings before extraordinary items − Operating cash flows)/ total assets (#89) in year $t-1$

where:

Earnings before extraordinary items = net income (#32) − extraordinary items (#33);

Operating cash flows[9] = Earnings before extraordinary items (as above)
+ Depreciation and Amortization (#11)
+ change of deferred income tax (#105)
+ change of untaxed reserve (#108)
+ change in other liabilities (#109)
+ minority interest (#27)
− current accruals (as defined below).

Current accruals = change in non-cash working capital
= Δ[total current assets (#75)
− cash and short term investments (#60)
− treasury stock shown as current assets (#73)]
− Δ[total current liabilities (#104)
− total amount of debt in current liabilities (#94)
− proposed dividends (#102)].

Abnormal accruals are calculated each year for 57,966 firm-year observations using data from 1994–2004. Because data for three consecutive years are needed to calculate abnormal accruals, 1996 is the first observation year in the accruals analysis sample. Abnormal accruals are scaled by a firm's lagged total assets, and

the mean (median) sample value is −0.011 (−0.010). The 25th percentile value of abnormal accruals is −0.070, and the 75th percentile value is +0.046. A total of 44 percent of the sample has positive (income-increasing) abnormal accruals and 56 percent has negative (income-decreasing) abnormal accruals.

The model in (1) below tests whether signed abnormal accruals differ around the world as a function of the country's investor protection environment and the firm's choice of a Big 4 versus non–Big 4 auditor, plus a set of controls for other factors that may affect accruals:

$$\begin{aligned} AB\_ACCR_{it} = {} & \beta_0 + \beta_1 BIG4_{it} + \beta_2 INVPRO + \beta_3 BIG4_{it}{*}INVPRO \\ & + \beta_4 LSALES_{it} + \beta_5 CFO_{it} + \beta_6 LEV_{it} + \beta_7 GROWTH_{it} \\ & + \beta_8 \Delta PPE_{it} + \beta_9 LAG\_LOSS_{it} + \textit{fixed effects} + e_{it} \end{aligned} \quad (1),$$

where:

AB_ACCR_{it} = signed abnormal accruals scaled by lagged total assets for firm i in year t.

$BIG4_{it}$ = 1 if firm i is audited by a Big 4 auditor in year t, 0 otherwise.

$INVPRO$ = proxies of investor protection, measured five ways:

1. LAW = 1 for a common-law country and 0 otherwise,
2. $ANTI\_DIR$ = antidirector rights' index (La Porta et al. 1998),
3. DIS_REQ = index of disclosure requirement (La Porta et al. 2006),
4. LIT_STD = index of liability standard (La Porta et al. 2006),
5. PUB_ENF = index of public enforcement (La Porta et al. 2006).

$LSALES_{it}$ = log of client sales in $ millions for firm i in year t.

CFO_{it} = operating cash flows for firm i in year t scaled by lagged total assets.

LEV_{it} = total liabilities/total assets for firm i in year t.

$GROWTH_{it}$ = sales growth rate, defined as the sales in year t minus sales in $t-1$ and scaled by sales in year $t-1$.

ΔPPE_{it} = growth rate of gross property, plant, and equipment (PPE), defined as PPE in year t minus PPE in $t-1$ and scaled by PPE in $t-1$.

LAG_LOSS_{it} = dummy variable = 1 if firm i reports negative income before extraordinary items in year $t-1$.

fixed effects = industry and year fixed effects.

e_{it} = error term.

We estimate (1) as a fixed effects model with year-specific dummy variables to control for systematic time period effects and industry dummies based on two-digit SIC codes to provide additional controls for omitted variables that could affect firm-level accruals. For brevity, the year and industry dummies are not reported in the tables.

Using the procedure in Rogers 1993, (1) is estimated to derive *t*-statistics and *p*-values that are robust with respect to heteroscedasticity. In addition, because country-level investor protection variables take on the same value for every firm within a country, it is possible that country effects are overstated due to repeated observations within countries. Therefore we also use the Rogers 1993 procedure to derive robust *t*-statistics and *p*-values that control for country clustering effects and the common variance among observations within a particular country (in addition to controlling for heteroscedasticity).[10]

Investor protection (*INVPRO*) is measured by the five ways discussed in section 3, and *BIG4* denotes whether a firm is audited by a Big 4 auditor. The primary coefficients of interest are β_2 and β_3. The investor protection variable alone (β_2) captures the effect of investor protection regimes on firms with non–Big 4 auditors, while the coefficient on the interaction term β_3 measures the incremental effect of investor protection regimes on Big 4 client accruals relative to the accruals of non–Big 4 clients, for a given investor protection regime. If β_3 is negative and significant, there is evidence that Big 4 clients have higher earnings quality (smaller abnormal accruals) than firms with non–Big 4 auditors as investor protection regimes become stricter.[11] The coefficient β_1 tests whether accruals of firms with Big 4 auditors are different from non–Big 4 clients when investor protection is effectively zero (that is, extremely weak). We make no prediction about the coefficient β_1 although it turns out that the variable is insignificant, which means there are no differences in the abnormal accruals of Big 4 and non–Big 4 clienteles when investor protection is extremely weak.

The control variables in (1) are intended to control for other firm-specific factors that can affect a firm's accruals based on prior research (for example, Becker et al. 1998; Frankel et al. 2002). We control for company size, measured by natural log of total sales (*LSALES*). Prior studies document that large firms tend to have lower levels of accruals than smaller firms, even though accruals are scaled by firm size (lagged total assets). We control for operating cash flows (*CFO*) deflated by lagged total assets because there is a well-documented inverse relation between the operating cash flows and accruals. The variable for leverage (*LEV*) controls for the likelihood of bankruptcy, and a higher total debt to asset ratio indicates a higher possibility of debt covenant violation, which creates an incentive to increase reported earnings through accruals-based earnings management. A dummy variable is used for firms with prior-year losses (*LAG_LOSS*) as another proxy for financial distress and bankruptcy risk and therefore an incentive to increase reported earnings in the subsequent year. The final two variables control for firm growth, which could also affect yearly accruals if the relation between accruals and the accruals drivers (sales and gross PPE) is nonlinear. *GROWTH* is defined as the growth in sales relative to prior year sales, and ΔPPE measures growth in gross PPE over the prior year.

Loss avoidance analysis

The second analysis determines whether the likelihood of reporting a loss differs across countries as a function of investor protection and whether there is a mediating Big 4 auditor effect. There is evidence that firms systematically manage earnings to avoid reporting losses (Burgstahler and Dichev 1997; Degeorge, Patel, and Zeckhauser 1999; Brown and Caylor 2005). We conjecture that loss recognition is more likely to occur in countries with stronger investor protection regimes because the consequences of hiding or underreporting losses will be greater for auditors in these countries, and Big 4 auditors are expected to have a relatively greater incentive to impose loss reporting on their clients relative to non–Big 4 auditors. Descriptive statistics in Table 3 indicate that 27.4 percent of firm-year observations reported a loss — that is, negative income before extraordinary items.

The model in (2) tests whether loss reporting is affected by a country's investor protection environment and the firm's choice of a Big 4 versus non–Big 4 auditor, plus a set of controls for size, leverage, and growth that may affect the likelihood of reporting losses, along with fixed effects for year and industry:

$$\begin{aligned} \mathrm{P}(LOSS_{it} = 1) = {} & \beta_0 + \beta_1 BIG4_{it} + \beta_2 INVPRO + \beta_3 BIG4_{it}{*}INVPRO \\ & + \beta_4 LSALES_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} \\ & + \textit{fixed effects} + e_{it} \end{aligned} \quad (2),$$

where:

$LOSS_{it}$ = dummy variable = 1 if firm i reports negative income before extraordinary items in year t, 0 otherwise.

All other variables are as defined in (1), and the same coefficients (β_2 and β_3) test the effects of investor protection and Big 4 auditor choice on the likelihood of reporting losses. As with (1), the model is estimated using procedures to derive asymptotic Z-statistics and p-values for coefficients that are robust with respect to heteroscedasticity and country clustering effects (Rogers 1993).

Earnings conservatism test

The third test uses the earnings conservatism framework of Basu 1997 to determine whether there are differences in timely loss recognition across countries as a function of investor protection regimes, and whether there is a mediating Big 4 auditor effect. The sign of a firm's annual stock returns is used to indicate whether the firm has experienced "good news" (positive returns) or "bad news" (negative returns) in the current fiscal year. Earnings conservatism exists if contemporaneous accounting earnings give recognition to bad news more quickly than good news. The premise of earnings conservatism is that losses are recognized immediately, while the recognition of gains (good news) is deferred until realized. Watts (2003) and LaFond and Watts (2008) argue that earnings conservatism is the defining feature of high quality earnings and makes earnings more useful for contracting and for reducing information asymmetry between the firm and outside investors.

Ball et al. (2000) use Basu's 1997 framework and report that earnings are relatively more conservative in countries with common-law legal systems than in countries with code-law systems for a sample drawn from eight countries. We extend their study by using an expanded set of countries, and by testing whether investor protection effects are mediated by the firm's choice of a Big 4 auditor. The following model in (3) builds on Basu 1997 as extended by Ball et al. 2000:

$$\begin{aligned} EARN_{it} = {} & \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 R{*}DR_{it} + \beta_4 BIG4_{it} + \beta_5 BIG4_{it}{*}DR_{it} \\ & + \beta_6 BIG4_{it}{*}R_{it} + \beta_7 BIG4_{it}{*}R_{it}{*}DR_{it} + \beta_8 INVPRO \\ & + \beta_9 INVPRO{*}DR_{it} + \beta_{10} INVPRO{*}R_{it} + \beta_{11} INVPRO{*}R_{it}{*}DR_{it} \\ & + \beta_{12} INVPRO{*}BIG4_{it} + \beta_{13} INVPRO{*}BIG4_{it}{*}DR_{it} \\ & + \beta_{14} INVPRO{*}BIG4_{it}{*}R_{it} + \beta_{15} INVPRO{*}BIG4_{it}{*}R_{it}{*}DR_{it} \\ & + \beta_{16} LMV_{it} + \beta_{17} LMV_{it}{*}DR_{it} + \beta_{18} LMV_{it}{*}R_{it} \\ & + \beta_{19} LMV_{it}{*}R_{it}{*}DR_{it} + \beta_{20} LEV_{it} + \beta_{21} LEV_{it}{*}DR_{it} \\ & + \beta_{22} LEV_{it}{*}R_{it} + \beta_{23} LEV_{it}{*}R_{it}{*}DR_{it} + \beta_{24} MB_{it} \\ & + \beta_{25} MB_{it}{*}DR_{it} + \beta_{26} MB_{it}{*}DR_{it} + \beta_{27} MB_{it}{*}R_{it}{*}DR_{it} \\ & + \textit{fixed effects} + e_{it} \end{aligned} \tag{3}$$

where:

$EARN_{it}$ = earnings per share before extraordinary items scaled by stock price at beginning of year t;

R_{it} = cumulative monthly stock return including dividend for the fiscal year t;

DR_{it} = dummy variable, which equals 1 if R_{it} is negative and 0 otherwise;

LMV_{it} = the natural log of market value of equity at the end of year t;

LEV_{it} = total liabilities/total assets for firm i in year t;

MB_{it} = market-to-book ratio at the end of year t.

Following Ball et al. 2000, R_{it} is the buy-and-hold monthly stock returns including dividends for the current fiscal year t. Controls (and related interactions) are added for firm size (LMV), leverage (LEV), and growth (MB). Year and industry fixed effects are the same as specified in (1) and (2), and the model is estimated with robust t-statistics and p-values with respect to heteroscedasticity and country-clustering effects (Rogers 1993).

The original Basu 1997 model is β_0 through β_3 in (3) and tests whether reported earnings are more strongly associated with negative contemporaneous stock returns (β_2) than with positive contemporaneous stock returns (β_3). A positive sign on β_3 is consistent with accounting earnings giving recognition to bad news (timely loss recognition) more quickly than good news. Coefficients β_4 through β_{15} introduce the effects of investor protection and Big 4 auditor choice, plus related interaction terms. The remaining terms in the model control for the effects of firm size (LMV),

leverage (*LEV*), growth (*MB*), and fixed effects for year and industry. The primary coefficients of interest are β_{11}, which measures the effect of investor protection regimes on earnings conservatism of firms with non–Big 4 auditors, and β_{15}, which is the incremental effect of investor protection on earnings conservatism of firms with Big 4 auditors relative to non–Big 4 clients.

As a caveat we note there are critiques of the Basu 1997 earnings conservatism model (for example, Dietrich, Muller, and Reidl 2007; Gigler and Hemmer 2001; Givoly, Hayn, and Natarajan 2007). Given the concerns raised in these critiques, we view the earnings conservatism analysis primarily as a triangulation with the other two tests. That is, if signed abnormal accruals are smaller (less income-increasing) and losses are more likely to occur in stronger investor protection regimes, then such earnings are implicitly consistent with the concept of accounting conservatism in Basu 1997 wherein reported earnings are lower ceteris paribus due to timely loss recognition.

5. Results

Signed abnormal accruals

The signed abnormal accruals analysis is reported in Table 4. Five regression models are reported in which each investor protection variable is tested one at a time. All models are significant with adjusted R^2s of around 16 percent. Significance levels of individual coefficients are reported as two-tailed *p*-values.

The investor protection variable by itself represents the effect on accruals of non–Big 4 clients as investor protection becomes stricter. The investor protection variable is insignificant at $p > 0.10$ in all five model estimations. We conclude there is no evidence that abnormal accruals of firms with non–Big 4 auditors are affected by the strictness of a country's investor protection regime.

The interaction of investor protection with the Big 4 variable measures the incremental effect of Big 4 auditors relative to non–Big 4 auditors as investor protection becomes stronger. The interaction term has a negative coefficient and is significant at $p = 0.02$ or less in all models except the model using *ANTI_DIR*, which is negative and significant at $p = 0.08$. A negative sign indicates that abnormal accruals of Big 4 clients are consistently smaller (less income-increasing) relative to the accruals of non–Big 4 clients as a country's investor protection regime becomes stricter.

We also consider the Big 4 indicator variable by itself, which measures whether accruals of firms with Big 4 auditors are different from accruals of firms with non–Big 4 auditors when investor protection is effectively zero (i.e., extremely weak). The Big 4 variable by itself is insignificant ($p > 0.10$) in all models except the model using *DIS_REQ*, which has a positive sign and is significant at $p = 0.07$. On balance we conclude there is no consistent evidence that accruals are different for clients of Big 4 versus non–Big 4 auditors when investor protection is extremely weak.

In sum, the evidence in Table 4 indicates that abnormal accruals are smaller (less income-increasing) as a country's investor protection regime becomes stronger.

TABLE 4
Regression analysis of abnormal accruals (dependent variable is signed abnormal accruals: *AB_ACCR*)

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
Intercept	0.011	0.013	0.001	0.011	0.003
	(0.06)	(0.23)	(0.95)	(0.21)	(0.73)
BIG4	−0.003	0.002	0.012	0.001	0.007
	(0.29)	(0.77)	(0.07)	(0.89)	(0.16)
Investor Protection	**0.005**	**0.000**	**0.016**	**0.005**	**0.015**
	(0.30)	**(0.92)**	**(0.17)**	**(0.62)**	**(0.15)**
BIG4*Investor Protection	**−0.009**	**−0.003**	**−0.027**	**−0.014**	**−0.023**
	(0.01)	**(0.08)**	**(<0.01)**	**(0.02)**	**(<0.01)**
LSALES	0.006	0.007	0.007	0.007	0.007
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
CFO	−0.322	−0.322	−0.322	−0.322	−0.322
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
LEV	−0.047	−0.047	−0.047	−0.047	−0.047
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
GROWTH	0.004	0.004	0.004	0.004	0.004
	(0.25)	(0.24)	(0.25)	(0.24)	(0.25)
Δ*PPE*	0.005	0.005	0.005	0.006	0.005
	(0.38)	(0.37)	(0.37)	(0.36)	(0.37)

(The table is continued on the next page.)

TABLE 4 (Continued)

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
LAG_LOSS	−0.014 (<0.010)	−0.013 (<0.010)	−0.014 (<0.010)	−0.013 (<0.010)	−0.014 (<0.010)
Adj. R^2	0.1623	0.1625	0.1624	0.1624	0.1623
n	57,966	57,966	57,966	57,966	57,966

Notes:

Coefficient *p*-values are two-tailed and robust to heteroscedasticity and country clustering effects using the method in Rogers 1993. Coefficients on year dummies and industry dummies based on two-digit SIC codes are not reported for brevity. *BIG4* is a dummy variable and equals 1 if a company is audited by a Big 4 auditor and 0 otherwise. *CFO* is the operating cash flows scaled by lagged total assets. All other variables are as defined in Tables 1 and 3. Statistics on test variables are shown in boldface.

However, this effect is mediated by the firm's choice of auditor, and it turns out that abnormal accruals are smaller only when the auditor is a Big 4 auditor and when investor protection is stronger. For firms with non–Big 4 auditors there is no evidence that abnormal accruals vary across investor protection regimes, nor are there systematic differences in Big 4 and non–Big 4 clienteles when investor protection is extremely weak.

Loss avoidance

The loss avoidance analysis is reported in Table 5 for five logistic regression models testing each investor protection variable one at a time. All models are significant with pseudo R^2s of around 18 percent. Significance levels of individual coefficients are based on two-tailed p-values for asymptotic z-statistics.

The investor protection variable captures the effect of investor protection regimes on firms with non–Big 4 auditors and is insignificant ($p > 0.10$) in all models in Table 5. On the basis of these results we conclude there is no evidence that firms with non–Big 4 auditors are more likely to report losses as country's investor protection regime becomes stricter.

The interaction of investor protection with the Big 4 indicator variable measures the incremental effect of investor protection for Big 4 clients relative to non–Big 4 clients as investor protection becomes stricter. The interaction term is positive and significant at $p < 0.01$ in all models except the model using *LAW*, which is positive and significant at $p = 0.07$. We conclude that the evidence consistently shows Big 4 clients are more likely to report losses than non–Big 4 clients, as investor protection regimes become stronger.

The Big 4 variable by itself determines whether firms with Big 4 auditors are more likely to report losses than firms with non–Big 4 auditors when investor protection is effectively zero (very weak). Overall there is no consistent evidence of differences in the likelihood of reporting losses for firms with Big 4 versus non–Big 4 auditors when investor protection is extremely weak. The model with *LAW* is significant and positive ($p = 0.04$), while the model with *PUB_ENF* is negative and significant ($p = 0.05$). The other three models are insignificant at $p > 0.10$.

We conclude that Big 4 clients are more likely to report losses than are clients of non–Big 4 auditors, but only as the country's investor protection environment becomes stricter. There is no evidence that investor protection regimes affect loss reporting by non–Big 4 clients, or that there are systematic differences in Big 4 and non–Big 4 clienteles when investor protection is extremely weak.

Earnings conservatism

The earnings conservatism analysis is reported in Table 6 with five separate regression models testing the investor protection variables one at a time. All models are significant with adjusted R^2s of around 22 percent, and significance levels of individual coefficients are reported as two-tailed p-values. The term *R*DR* is positive and replicates the basic finding in Basu 1997 that earnings are conservative in the sense of reflecting the timelier recognition of bad news (as proxied by negative stock returns) relative to good news (as proxied by positive stock returns).

TABLE 5
Logistic regression analysis of loss avoidance (dependent variable is the probability of reporting a loss: P(*Loss* = 1))

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
Intercept	−1.225	−1.304	−1.259	−1.336	−1.208
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
BIG4	0.219	−0.191	−0.355	−0.032	−0.301
	(0.04)	(0.12)	(0.12)	(0.83)	(0.05)
Investor Protection	**0.147**	**0.037**	**0.143**	**0.262**	**0.097**
	(0.42)	**(0.61)**	**(0.75)**	**(0.46)**	**(0.84)**
BIG4*Investor Protection	**0.238**	**0.146**	**0.918**	**0.569**	**0.999**
	(0.07)	**(<0.01)**	**(<0.01)**	**(<0.01)**	**(<0.01)**
LSALES	−0.470	−0.480	−0.474	−0.485	−0.476
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
LEV	2.522	2.548	2.531	2.555	2.53
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
GROWTH	0.016	0.012	0.013	0.009	0.014
	(0.84)	(0.88)	(0.86)	(0.90)	(0.85)
Pseudo-R^2	0.180	0.182	0.181	0.183	0.182
n	85,193	85,193	85,193	85,193	85,193

(The table is continued on the next page.)

TABLE 5 (Continued)

Notes:

Coefficient *p*-values are two-tailed and based on asymptotic *z*-statistics robust to heteroscedasticity and country clustering effects using the method in Rogers 1993. Coefficients on year dummies and industry dummies based on two-digit SIC codes are not reported for brevity. Variables are as defined in Tables 1 and 3. Statistics on test variables are shown in boldface.

The three-way interaction term "*Investor Protection*R*DR*" tests the earnings conservatism of non–Big 4 clients across investor protection regimes. The coefficients are negative and significant at $p < 0.05$ in two models (*DIS_REQ* and *PUB_ENF*), and insignificant at the 0.10 level in the other three models. We conclude that there is no evidence earnings conservatism increases for firms with non–Big 4 auditors as investor protection becomes stricter. However, there is some evidence to suggest that the opposite occurs because the negative coefficients on *DIS_REQ* and *PUB_ENF* imply that firms with non–Big 4 auditors may actually have less earnings conservatism as investor protection becomes stronger, although we have no explanation for this result.

The four-way interaction term "*Investor Protection*R*BIG4*DR*" tests the incremental earnings conservatism of Big 4 clients relative to non–Big 4 clients as investor protection regimes become stronger. The coefficients are positive and significant at $p = 0.01$ or less in all models except the model with *LAW*, which is insignificant ($p = 0.23$). Overall, the evidence indicates that firms with Big 4 auditors report relatively more conservative earnings than non–Big 4 clients as a country's investor protection regime becomes stronger.[12]

In sum, we observe the same general pattern across all three tests. Earnings quality is consistently higher as investor protection becomes stronger, but only for those firms with Big 4 auditors. Signed abnormal accruals become smaller (less income-increasing) and the likelihood of reporting a loss increases for firms with Big 4 auditors relative to non–Big 4 clients as a country's investor protection regime becomes stronger. Because all clients are required to follow the applicable accounting standards within a particular country, systematic differences in accruals and loss reporting imply differences in enforcement by Big 4 and non–Big 4 auditors. Together these two tests imply greater accounting conservatism in the sense of reporting smaller earnings and/or losses and are consistent with the formal test of accounting conservatism using the Basu 1997 framework of timely loss recognition.

Overall the evidence is compelling and consistently shows that investor protection and auditing have a joint role in the production of higher quality earnings numbers. That is, the role of investor protection on earnings quality is mediated by auditing rather than being a direct effect in its own right. The evidence is consistent with Big 4 auditors having incentives to impose higher earnings quality on their clients as investor protection regimes become stricter. In contrast, the earnings

TABLE 6
Multivariate analysis of earnings conservatism of Big 4 clients (dependent variable is earnings per share before extraordinary items: *EARN*)

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
Intercept	0.123	0.139	0.148	0.134	0.136
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
DR	−0.031	−0.009	−0.013	−0.023	−0.006
	(0.01)	(0.63)	(0.55)	(0.15)	(0.75)
R	0.016	0.018	0.007	0.013	0.001
	(0.31)	(0.46)	(0.76)	(0.58)	(0.96)
*R*DR*	0.163	0.230	0.286	0.185	0.297
	(<0.01)	(<0.01)	(<0.01)	(0.01)	(<0.01)
BIG4	−0.011	−0.008	0.002	−0.010	−0.006
	(0.10)	(0.62)	(0.90)	(0.32)	(0.69)
*BIG4*DR*	0.008	−0.010	−0.006	0.001	−0.010
	(0.32)	(0.44)	(0.74)	(0.96)	(0.44)
*BIG4*R*	0.017	0.035	0.049	0.023	0.042
	(0.11)	(0.01)	(0.01)	(0.10)	(0.02)
*BIG4*R*DR*	0.019	−0.078	−0.105	−0.025	−0.112
	(0.55)	(0.04)	(0.01)	(0.49)	(<0.01)
Investor Protection	−0.024	−0.009	−0.053	−0.038	−0.045
	(0.01)	(0.03)	(0.03)	(0.02)	(0.08)

(The table is continued on the next page.)

TABLE 6 (Continued)

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
*Investor Protection*DR*	0.009	−0.005	−0.015	−0.005	−0.031
	(0.52)	(0.23)	(0.59)	(0.77)	(0.13)
*Investor Protection*R*	0.004	−0.001	0.014	0.003	0.019
	(0.76)	(0.83)	(0.55)	(0.87)	(0.38)
Investor Protection*R*DR	**−0.009**	**−0.021**	**−0.168**	**−0.043**	**−0.203**
	(0.87)	**(0.10)**	**(0.01)**	**(0.52)**	**(<0.01)**
*Investor Protection*BIG4*	−0.000	−0.001	−0.017	−0.000	−0.011
	(0.97)	(0.85)	(0.44)	(1.00)	(0.62)
*Investor Protection*BIG4*DR*	−0.005	0.006	0.018	0.010	0.029
	(0.69)	(0.14)	(0.49)	(0.47)	(0.17)
*Investor Protection*BIG4*R*	−0.033	−0.01	−0.065	−0.041	−0.066
	(0.01)	(<0.01)	(<0.01)	(0.02)	(<0.01)
Investor Protection*BIG4*R*DR	**0.049**	**0.037**	**0.209**	**0.120**	**0.254**
	(0.23)	**(<0.01)**	**(<0.01)**	**(0.01)**	**(<0.01)**
LMV	0.009	0.009	0.01	0.01	0.009
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
*LMV*DR*	0.000	0.000	0.000	0.000	0.000
	(0.96)	(0.98)	(0.92)	(0.98)	(0.99)
*LMV*R*	−0.000	−0.000	−0.001	−0.000	−0.000
	(0.83)	(0.95)	(0.78)	(0.86)	(0.93)

(The table is continued on the next page.)

TABLE 6 (Continued)

Independent variables	Investor protection = *LAW*, estimate (*p*-value)	Investor protection = *ANTI_DIR*, estimate (*p*-value)	Investor protection = *DIS_REQ*, estimate (*p*-value)	Investor protection = *LIT_STD*, estimate (*p*-value)	Investor protection = *PUB_ENF*, estimate (*p*-value)
*LMV*R*DR*	−0.027	−0.028	−0.027	−0.028	−0.028
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
LEV	−0.048	−0.048	−0.048	−0.047	−0.047
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
*LEV*DR*	0.002	−0.002	0.000	0.000	−0.002
	(0.81)	(0.83)	(0.98)	(0.97)	(0.89)
*LEV*R*	0.079	0.078	0.08	0.079	0.081
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
*LEV*R*DR*	0.061	0.058	0.052	0.064	0.052
	(0.12)	(0.16)	(0.22)	(0.11)	(0.22)
MB	−0.003	−0.003	−0.003	−0.003	−0.003
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
*MB*DR*	0.000	0.000	0.000	0.000	0.000
	(0.94)	(0.92)	(0.96)	(0.92)	(0.93)
*MB*R*	−0.002	−0.002	−0.002	−0.002	−0.002
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)
*MB*R*DR*	−0.002	−0.002	−0.002	−0.002	−0.002
	(0.37)	(0.36)	(0.33)	(0.38)	(0.34)
Adj. R^2	0.215	0.217	0.216	0.216	0.215
n	68,167	68,167	68,167	68,167	68,167

(The table is continued on the next page.)

TABLE 6 (Continued)

Notes:

Coefficient *p*-values are two-tailed and robust to heteroscedasticity and country clustering effects using the method in Rogers 1993. Coefficients on year dummies and industry dummies based on two-digit SIC codes are not reported for brevity. Variables are as defined in Tables 1 and 3. Statistics on test variables are shown in boldface.

quality of firms with non–Big 4 auditors does not vary systematically across investor protection regimes, nor are there systematic Big 4/non–Big 4 differences when the investor protection regime is extremely weak.

Separate Big 4 and non–Big 4 tests

We are also interested in knowing whether earnings quality increases for firms with Big 4 auditors as investor protection regimes become stronger, irrespective of the relative comparison with non–Big 4 clients. To formally evaluate this, we limit the sample to just those firms audited by Big 4 auditors and reestimate the models in Tables 4 through 6.

These untabulated results show that as a country's investor protection environment becomes stronger, Big 4 clients report smaller signed abnormal accruals and are more likely to report a loss. More specifically, for the abnormal accruals analysis, the investor protection variables are all negative and significant at $p < 0.10$ except *PUB_ENF*, which is significant at $p = 0.10$. Negative coefficients indicate smaller (less income-increasing) abnormal accruals. For the loss avoidance analysis, the investor protection variables are all positive and significant at $p < 0.05$. A positive coefficient indicates a greater likelihood of reporting a loss as investor protection becomes stricter. These results are consistent with Tables 4 and 5 and show that earnings quality of Big 4 clients increases with stronger investor protection environments. However, the earnings conservatism analysis is less conclusive. Two test variables are positive and significant (*ANTI_DIR* and *LIT_STD*) at $p < 0.10$, while the other three variables are insignificant.

For completeness we also reestimate the models in Tables 4 through 6 just for firms with non–Big 4 auditors. This analysis finds no evidence that abnormal accruals or the likelihood of reporting a loss are affected by a country's investor protection regime, which is consistent with the evidence for the full sample reported in Tables 4 and 5. Also consistent with Table 6, there is some evidence that earnings conservatism of non–Big 4 clients decreases as investor protection becomes stronger. Specifically, three of the investor protection variables are significant ($p < 0.10$) and have negative signs.

6. Robustness tests

Deleting U.S. firms

As discussed in section 2, an alternative scenario is that Big 4 auditors impose a unique level of earnings quality and accounting conservatism on their U.S. clients

due to the extreme litigation risk in the United States. If true, then we should not observe a significant interaction between investor protection and the Big 4 variable if the U.S. observations are dropped from the sample. Therefore we delete all U.S. firms and reestimate the models in Tables 4 through 6. These untabulated results are consistent with those reported in Tables 4 through 6. For the abnormal accruals analysis, the Big 4 interaction variable is significant at $p < 0.10$ in all models (except *ANTI_DIR*, which is insignificant at $p = 0.24$). For the loss avoidance analysis, the Big 4 interaction variable is significant in two of the five models at $p < 0.10$, but is insignificant for *LAW*, *DIS_REQ*, and *LIT_STD*. Finally, for earnings conservatism the Big 4 interaction variable is significant at $p < 0.10$ in four models (*LAW* is insignificant at $p = 0.67$). In sum, results on the abnormal accruals and accounting conservatism tests are robust to excluding the United States because four of five models for each test are significant; but results on loss reporting are mixed, as only two of five models are significant. Overall, though, most of the models are robust to countries outside the United States and therefore demonstrate that the United States is not an outlier with respect to the role of stricter investor protection on the earnings quality of Big 4 clients.

Deleting smaller countries

In order to assure that smaller countries with fewer observations do not drive the results, we reestimate the models in Tables 4 through 6 for the 14 largest countries in the sample having 1,000 or more firm-year observations. These additional results are nearly identical to the results reported in Tables 4 through 6 in terms of the sign and statistical significance on the test variables of interest. We conclude that smaller countries do not drive the results.

Economic magnitude

To compute an economic magnitude of the impact of stronger investor protection and Big 4 audits on pre-tax earnings, we use the investor protection variable *LAW* to measure high and low levels of investor protection based on the common-law/code-law distinction. The coefficient on the interaction of investor protection and Big 4 auditor (-0.009 in Table 4) measures the average magnitude of abnormal accruals, scaled by lagged assets, for firms with a Big 4 auditor versus a non–Big 4 auditor in common-law countries. We use this coefficient to derive a percentage effect on median pre-tax earnings, adjusting for median lagged assets. This calculation results in an average reduction of -10.51 percent in median pre-tax earnings for a firm with a Big 4 auditor in common-law countries compared with a firm with a non–Big 4 auditor in common-law countries.

A second analysis uses the subsample of firms with Big 4 auditors to compute the effect of abnormal accruals on median pre-tax earnings of Big 4 clients in common-law versus those in code-law countries. Following the same procedure described above, this calculation results in lower median pre-tax earnings of -4.67 percent for firms with Big 4 auditors in common-law countries relative to Big 4 clients in code-law countries.

We also compute the impact of investor protection and Big 4 audits on the likelihood that firms report losses. To do this we calculate the expected probability of a loss based on median values of all control variables in the model. This calculation results in a loss likelihood of 14.41 percent for a Big 4 client in a common-law country versus 10.28 percent for a non–Big 4 client in a common-law country. This is an increase of just over 4 percent in absolute terms, and a relative increase of over 40 percent. In the subsample of firms with Big 4 auditors, the likelihood of reporting a loss increases from 8.34 percent in code-law countries to 11.78 percent in common-law countries, an increase of 3.44 percentage points.

The economic magnitude of smaller abnormal accruals is material using the conventional 5 percent rule of thumb for materiality. Of course, the impact on earnings per share could be even more pronounced, and prior research shows that discretionary earnings management of even one cent per share matters and can be the difference between meeting or missing earnings forecasts, or avoiding losses, both of which can have dramatic effects on stock prices (Barth, Elliot, and Finn 1999; Degeorge et al. 1999; Matsumoto 2002). In sum, our evidence indicates that in weaker investor protection settings firms appear to have greater discretion over abnormal accruals to manage earnings and avoid losses, even those companies audited by Big 4 accounting firms.

7. Conclusion

Our study reinforces the findings in other cross-country studies that earnings are of relatively higher quality in countries with stronger legal systems and investor protection environments. For example, there is evidence of less earnings management (Leuz et al. 2003), greater earnings conservatism (Ball et al. 2000), and greater value-relevance (Hung 2000) in countries with stricter investor protection regimes. However, our results suggest that stricter investor protection per se does not lead to increased earnings quality, at least on the basis of earnings attributes in our study. Specifically, earnings quality is greater as investor protection becomes stronger, but only for firms with the well-known international Big 4 auditors. In contrast, earnings quality of non–Big 4 clients is invariant across investor protection regimes. This evidence shows that the effect of investor protection is mediated through the incentives of auditors, and that stricter investment protection regimes lead to higher-quality earnings only for firms with Big 4 auditors. In other words, the effect of investor protection seems to be an indirect one that works through the incentives on Big 4 auditors to enforce the reporting of higher-quality earnings by clients.[13]

The evidence also shows that Big 4 auditors do not universally enforce high-quality earnings absent the incentives created by stricter investor protection regimes. Specifically, there are no differences in earnings quality of Big 4 and non–Big 4 clients when investor protection is effectively zero (very weak). In the absence of investor protection, Big 4 auditors simply do not have incentives to enforce high-quality earnings and risk dismissal by their clients. Thus our findings refute the view that Big 4 auditor behavior is uniform throughout the world, irrespective of country-specific context.

Our results also counter the assertion that the effect of Big 4 audits on earnings quality in the United States is unique and driven by the extreme U.S. legal environment. Specifically, we observe the same general pattern of increasing earnings quality for Big 4 clients in stronger investor protection environments outside of the United States. We conclude that the level of earnings quality for Big 4 clients observed in the United States is generally consistent with that of other countries that also have strong investor protection environments. While our study cannot determine the optimal level of investor protection, our results do demonstrate that Big 4 auditor behavior in the United States is not an outlier or the unique consequence of what is often claimed to be an excessive litigation risk environment.

What does our study imply for current efforts to globally harmonize both auditing and financial reporting standards? On one hand, our findings indicate that Big 4 auditors appear to behave differently across investor protection regimes. If uniform auditor behavior around the world is a desirable goal, then mandating uniform global audit standards appears to be necessary because it is not currently happening on a voluntary basis. However, the problem with mandating uniform audit standards is that there must also be appropriate country-level incentives and enforcement mechanisms to ensure that auditors apply the mandated standards as intended. On this latter point, our evidence is quite compelling that Big 4 auditors behave differently in response to the specific incentives they face in different institutional settings. Given this observed behavior, we are skeptical that audit quality can be significantly affected by mandating uniform auditing standards without also making concurrent changes in the underlying institutional environment that affects auditors' incentives. A commentary in the wake of the Parmalat scandal by Parker 2004 (17) in the *Financial Times* notes that accounting firms "are not unified companies but global networks of autonomous, country-specific businesses. This militates against consistent audit work across the networks."

To conclude, our results suggest that earnings quality varies across countries mainly due to differences in enforcement by Big 4 auditors rather than underlying differences in the quality of accounting, per se. That is, in countries with stronger investor protection, Big 4 auditors impose a higher level of earnings quality on their clients, whereas non–Big 4 auditors do not. Thus we believe that cross-country differences in earnings are more likely to be the result of enforcement differences (by Big 4 auditors) rather than fundamental differences in underlying accounting standards and policies. In short, auditor enforcement may matter more than a country's accounting standards in shaping earnings quality around the world, and Big 4 auditor incentives in particular appear to be directly affected by a country's investor protection environment and the consequences on auditors from a failure to detect client misreporting.

Endnotes

1. The Big 4 accounting firms are Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers. The data in the study covers the period 1994–2004 and some of the data predate the collapse of Arthur Andersen in 2002. However, companies audited by Arthur Andersen are included in the study, as are companies audited by

Price Waterhouse and Coopers & Lybrand prior to their 1997 merger, which reduced the then Big 6 accounting firms to the Big 5. We use the term Big 4 throughout the paper to refer to the above set of large international accounting firms.

2. Examples of cross-country comparative accounting studies include Ali and Hwang 2000; Hung 2000; Ball et al. 2000; Ball, Robin, and Wu 2003; Choi and Wong 2007; Francis, Khurana, and Pereira 2003; Leuz et al. 2003; Hope 2003; Khurana and Raman 2004; and Barniv, Myring, and Thomas 2005.
3. The Big 4 firms are organized as country-specific partnerships and superimpose a global structure on top of these country-specific partnerships so that the global firm can be characterized as a federation or "partnership of partnerships". Consistent with this country-specific view is the registration of Big 4 firms with the Public Company Accounting Oversight Board (PCAOB). All of the Big 4 firms register their separate partnerships around the world that are involved with audits of Securities and Exchange Commission (SEC) registrants. For example, the PCAOB website indicates that KPMG has registered 40 separate country-specific partnerships (http://www.pcaobus.org/Registration).
4. One possible explanation for the differences in the two studies is that audit fees and audit effort do not necessarily map to differences in auditor judgements with respect to client earnings. That is, even though Big 4 auditors may charge a lower (higher) premium relative to non–Big 4 auditors in stronger (weaker) legal regimes, it is possible that Big 4 auditors still impose relatively more conservative accounting on their clients (compared with non–Big 4 auditors) as legal regimes become stricter. A reason for this is that Big 4 auditors have greater reputation capital to protect, not only from the potential risk of litigation, but also from more general adverse reputation effects when a Big 4 firm's audit quality is publicly questioned. Examples of these broader reputation effects include the contagion effect on non-Houston clients of Arthur Andersen following the Enron affair (Chaney and Philipich 2002), and the difficulties firms have in retaining clients and attracting new clients when they are the subject of SEC enforcement actions (Wilson and Grimlund 1990).
5. This index is based on six specific elements of investor protection dealing with the ability of outside (minority) investors to challenge the control of the firm by managers and dominant (inside) owners. Country-level scores can range from 0 to 6 based on the sum of six indicator variables that reflect shareholder rights: (a) the ability to vote by mail, (b) the ability to gain control of shares during the shareholders' meeting, (c) the possibility of cumulative voting for directors, (d) the ease of calling an extraordinary shareholders' meeting, (e) the availability of mechanisms allowing minority shareholders to make legal claims against directors, and (f) shareholders have preemptive rights that can be waived only by a shareholders' vote. Larger values of the antidirector rights' index indicate that minority shareholders are better protected against expropriation by management and controlling shareholders.
6. To compute abnormal accruals, a company must have observations for at least three consecutive years, so 1996 is the first test year. In the loss-avoidance and earnings conservatism analyses, a company must have observations for at least two consecutive years, so 1995 is the first test year. Therefore, the number of observations is smaller in the abnormal accruals analysis than those used in the loss-avoidance analysis. In the

earnings conservatism analyses, a company must have only two consecutive years of data; however, the sample is smaller due to additional data required for stock returns.

7. Maijoor and Vanstraelen (2006) also adapt the model in DeFond and Park 2001 to study the use of current working capital accruals to manage earnings in a cross-country comparison of firms in France, Germany, and the United Kingdom.
8. Because of missing values for depreciation (#12) on COMPUSTAT Global, depreciation is computed as depreciation and amortization (#11) minus amortization (#13). Amortization is assumed to be zero if it has missing values.
9. As in Ali and Hwang 2000, missing values on deferred income taxes, untaxed reserves, and minority interests are treated as zero.
10. The Rogers 1993 robust *t*-statistics assume that the observations denoted by *j* are not independent but that can be divided into *M* groups G_1,G_2, … , G_M that are independent. Then the robust estimator of variance is

$$\hat{V}' = \hat{V}\left(\sum_{k\ =\ 1}^{M} u_k^{(G)'} u_k^{(G)}\right)\hat{V},$$

where $u_k^{(G)}$ is the contribution of the *k*th group to the scores $\partial \ln L/\partial\beta$. That is, application of the robust variance formula merely involves using a different decomposition of, namely, $u_k^{(G)}$ $k = 1, \ldots, M$ rather than $u_j, j = 1, \ldots, N''$ (Stata Corporation 2005, [U] 20.14, 279). In other words, the robust variance is calculated as if there were only *M* observations rather than *N* observations and, accordingly, the *t*-statistics have *M* degrees of freedom instead of $N - (p + 1)$ (where *p* is the number of regressors) (Rogers 1993). In our analysis, we have observations from 42 countries, and it is reasonable to believe that observations might be correlated within each country (intra-cluster dependence). The Rogers 1993 approach treats each country as a cluster and estimates the variance as if there were only 42 observations and the corresponding *t*-values have 42 degrees of freedom.
11. It is possible for earnings of firms with non–Big 4 auditors to also be of higher quality as investor protection becomes stricter, in which case the coefficient β_2 will be negative and significant. However, even if this is the case, a negative coefficient for β_3 will still indicate that there is a relatively higher earnings quality of Big 4 firms compared with non–Big 4 firms, which is consistent with Big 4 auditors having stronger incentives to enforce high quality earnings in stricter investor protection regimes.
12. Because non–Big 4 auditors exhibit less conservatism for *DIS_REQ* and *PUB_ENF*, the positive sign on the Big 4 variable is only relative to the negative non–Big 4 test result. However, analysis of the Big 4 sample, set out under the heading "Separate Big 4 and Non–Big 4 Tests", below, clearly shows that clients of Big 4 auditors exhibit greater earnings conservatism as investor protection becomes stronger.
13. As noted in section 3, a concurrent study by Choi et al. 2008 implies the opposite of our finding with respect to differential Big 4/non–Big 4 audit quality in weak versus strong legal environments. Even though the two studies are not directly comparable because Choi et al. examine audit fees and we study earnings characteristics, it is clear that more research is needed to understand how country-specific institutions affect auditing practices and audit quality.

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