Disclosure Practices, Enforcement of Accounting Standards, and Analysts' Forecast Accuracy: An International Study

O L E - K R I S T I A N   H O P E *

ABSTRACT

Using a sample from 22 countries, I investigate the relations between the accuracy of analysts' earnings forecasts and the level of annual report disclosure, and between forecast accuracy and the degree of enforcement of accounting standards. I document that firm-level disclosures are positively related to forecast accuracy, suggesting that such disclosures provide useful information to analysts. I construct a comprehensive measure of enforcement and find that strong enforcement is associated with higher forecast accuracy. This finding is consistent with the hypothesis that enforcement encourages managers to follow prescribed accounting rules, which, in turn, reduces analysts' uncertainty about future earnings. I also find evidence consistent with disclosures being more important when analyst following is low and with enforcement being more important when more choice among accounting methods is allowed.

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1. Introduction

Although differences in accounting rules across countries have diminished significantly in recent years, owing to the harmonization efforts of the International Accounting Standards Committee/Board (IASC/IASB) and other organizations, there has not been a corresponding trend in the enforcement of accounting standards internationally (e.g., FEE [1999]). This is of concern to standard setters, regulators, and investors (e.g., SEC [2000]). Firms also vary widely in their disclosure practices. In this article, I examine the associations between the accuracy of financial analysts' earnings forecasts and variations in firms' disclosures and enforcement of accounting standards.

I focus on professional financial analysts as they are among the most important users of financial reports, and researchers have long been interested in learning about their use of accounting information (Schipper [1991]). Recently, accounting researchers show increased interest in the work of financial analysts outside the United States. Their research documents that both in the United States and elsewhere investors incorporate analysts' earnings forecasts in their firm valuations and respond to revisions in those forecasts, (e.g., Capstaff, Paudyal, and Rees [2000], Bercel [1994]).

This article contributes to the literature on determinants of analysts' earnings forecast accuracy and the international accounting literature. Few, if any, studies have investigated the potentially important role of enforcement of accounting standards internationally. Considerable variation persists in enforcement worldwide, even as cross-country differences in accounting measurement have diminished. In contrast to previous research, I examine effects of variations in *firm*-level disclosures in a cross-country setting. Given managers' discretion over how much information to disclose in annual reports, I also explore the possibility that disclosure levels and forecast accuracy are jointly determined.

Controlling for firm- and country-level factors, I document that the accuracy of analysts' earnings forecasts is positively associated with firm-level annual report disclosure quantity both in the United States and elsewhere. This finding is consistent with analysts' finding such information useful for forecasting. My comprehensive proxy for enforcement is significantly and positively related to forecast accuracy. This result suggests that strong enforcement encourages managers to follow the accounting standards that are in place, hence reducing analysts' uncertainty about managers' accounting choices. These results are subjected to a number of robustness tests, including a test of potential simultaneity between firms' disclosure choices and forecast accuracy.

I further hypothesize that disclosures are less positively correlated with forecast accuracy when a firm's analyst following is high (where analyst following is used as a proxy for the information environment). Multivariate results support this hypothesis. This finding is consistent with the contention

that annual reports play a greater role in the communication process for firms followed by few analysts. Finally, I investigate and find evidence consistent with the benefits of enforcement being greater in environments that allow for greater choice among accounting methods.

The article is organized as follows. Section 2 provides background on disclosures and enforcement. Section 3 develops hypotheses and section 4 describes how disclosures, enforcement, and forecast accuracy are measured. Sections 5 and 6 present the control variables and empirical analysis, respectively. Conclusions and discussions of future research possibilities are presented in section 7. The Appendix contains details on the disclosure scores used.

2. Background on Disclosures and Enforcement

2.1 DISCLOSURES

Many practitioners and researchers advocate enhanced firm disclosures (e.g., the Jenkins Committee, AICPA [1994]). Internationally, both the IASC/IASB and groups such as the International Organization of Securities Commissions (IOSCO) and International Federation of Stock Exchanges (FIBV/WFE) have actively promoted greater disclosure by firms and transparency of financial information. These groups assert that there are benefits to expanded disclosures. One such alleged benefit is reduced information asymmetry. Although accounting researchers extensively explain variations in disclosure levels among firms and countries, research on the effects of differences in disclosure levels is more limited, especially in international settings (Saudagaran and Meek [1997]).

Financial analysts employ several information sources to arrive at their evaluations of firm prospects. In this study I investigate the amount of information in annual reports. Lang and Lundholm [1993] find a high, significant, and positive correlation between annual report disclosures and other forms of disclosure (see also Holland [1998]). Surveys and other research evidence document that the annual report is a vital, though not sufficient, source of information to analysts both in the United States and elsewhere (e.g., AIMR [2000], Vergoossen [1993], Chang and Most [1985]).

Research investigating whether properties of analysts' forecasts are associated with firm disclosure follows either a within-country, firm-level approach or an across-country, country-level approach. For U.S. firms, Lang and Lundholm [1996] find ratings of annual report disclosures (a subset of the overall AIMR ratings) to be significantly negatively associated with forecast dispersion but *not* significantly related to forecast accuracy. Similarly, for firms domiciled in Sweden, Adrem [1999] finds no significant relationship between an active and informative disclosure strategy and forecast accuracy. For Singaporean firms, Eng and Teo [2000] report that, if earnings changes are controlled for, the amount of annual report disclosure is not significantly related to forecast accuracy.

Basu, Hwang, and Jan [1998] document that country-average disclosure levels are positively associated with forecast accuracy in a sample of seven countries. Using only country-level data from 37 countries, Khanna, Palepu, and Chang [2000] find a significant and positive relation between forecast accuracy and an annual report disclosure metric (country averages from CIFAR [1990]). Thus, there is mixed evidence from single- and multi-country studies that level of disclosure is related to the accuracy of analysts' earnings forecasts.

A limitation of using country-level disclosure scores is that the within-country variation in firm disclosures can be as great as between-country variation.[1] This is the case in my study. This article, in contrast to previous research, examines *firm-level* disclosures in an *across-country* setting. Moreover, I recognize that disclosures are not likely to be exogenous and consequently examine determinants of disclosure quantity (see section 6.4).

2.2 ENFORCEMENT OF ACCOUNTING STANDARDS

The subject of enforcement of accounting standards has attracted increased attention in recent years. Although we have observed diminishing differences in accounting recognition and measurement internationally, enforcement continues to differ significantly across countries, even being nonexistent in some countries (FEE [1999]).

Many scholars argue that the extent to which standards are enforced and violations prosecuted is as important as the standards themselves (e.g., Sunder [1997, p. 167]). In particular, the quality of financial information is a function of both the quality of accounting standards and the regulatory enforcement or corporate application of the standards (Kothari [2000, p. 92]). Absent adequate enforcement, even the best accounting standards will be inconsequential. If nobody takes action when rules are breached, the rules remain requirements only on paper. In some environments, for example, firms behave toward "mandatory" requirements as if they were voluntary (Marston and Shrives [1996]). To illustrate, even though accounting policy disclosures are required in most countries as well as by IAS 1 (e.g., Saudagaran and Diga [1997]), Frost and Ramin [1997] document considerable variation in accounting policy disclosures within and across countries.

Although academics and practitioners agree on the importance of enforcement as an essential element of the financial reporting infrastructure, there is little, if any, research on enforcement in an international setting. One potential explanation for this is that it is not easy to measure enforcement across countries. I discuss in section 4 how to operationalize enforcement.

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[1] The benefit of using country-level rather than firm-level disclosure scores is that it can increase the sample size significantly and potentially eliminate some noise in firm-level measures.

3. Hypotheses

3.1 HOW VARIATIONS IN DISCLOSURES AFFECT ANALYSTS' FORECASTS

Holland [1998] argues that an overall aim of a firm's disclosure activities is to increase investors' understanding of the firm's performance and future outlook, and to ensure that participants interpret firm-provided information in an informed and similar manner.

In forecasting future earnings, analysts face uncertainties related to understanding both the firm's economic situation and the accounting alternatives it uses. Annual report disclosures, as measured in this article (see section 4.1 and the Appendix), can aid analysts in forecasting earnings in several specific ways.

With respect to the economics of the firm, analysts can gain insight into future plans and firm strategy through the management discussion and analysis. Furthermore, the detail provided about product and market segments can be relevant for forecasting if some segments grow faster than others or have different risk profiles. Disclosures of subsequent events and investments in capital assets have potential to provide information on future earnings that is not reflected in the basic audited financial statements. The level of detail in the basic financial statements (income statement, balance sheet, and statement of cash flows) can assist in assessing the sustainability of earnings.

In addition to understanding firm strategy and prospects, analysts also need to have a solid understanding of the firm's accounting practices. Disclosures of the main accounting policies followed (typically in the first note) help analysts understand firms' financial reporting at a general level (Hope [2003a]). More detailed information can be acquired through the specific notes to the accounts.

To the extent that annual report disclosures are informative about firms' prospects and accounting practices (and to the extent that analysts actually rely on disclosures in the annual report), enhanced disclosure should be associated with greater earnings forecast accuracy. This leads to the following hypothesis, which is an extension of single-country studies to an across-country setting using firm-level disclosure data:

> *H1:*   The quantity of annual report disclosure is positively associated with the accuracy of analysts' earnings forecasts.[2]

In general, the extent of disclosure in annual reports varies with several factors. In particular, it is possible that the demand for disclosure is endogenous and decreases with forecast accuracy. In section 6.4 I investigate determinants of disclosure quantity and test whether results are sensitive to the simultaneous testing of disclosures and forecast accuracy.

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[2] As discussed in section 5, earnings timeliness should be negatively related to earnings predictability. The hypotheses in this paper are thus conditional on timeliness (and other factors) as described in section 5.

3.2 HOW VARIATIONS IN ENFORCEMENT INFLUENCE MANAGERS AND ANALYSTS

I expect managers to follow prescribed accounting and disclosure rules to a greater extent when enforcement is stronger. For example, if the accounting standards prescribe that firms must use the percentage-of-completion method for recognizing revenue from long-term contracts, firms will actually do this. In addition, I expect strong enforcement to reduce instances of financial reporting-related fraud. Reducing fraud increases the reliability of the financial reports (Ball [2001, p. 145]). Greater adherence to rules and regulations should reduce financial analysts' uncertainty about the accounting methods used and how they are applied (accounting uncertainty), in turn making the task of forecasting earnings relatively easier. The second hypothesis is then:

> *H2:* The level of enforcement of accounting standards is positively associated with the accuracy of analysts' earnings forecasts.

This hypothesis assumes that enforcement of accounting policies makes managers' reporting strategies more predictable. Alternatively, it could be that enforcement is stronger in environments in which accounting and disclosure practices are of the lowest quality or the least consistent. Said another way, the need for strong "policing" of accounting standards might be less in environments in which practice is satisfactory because of cultural or other reasons. This possibility, however, is not consistent with the country variations in enforcement noted in section 6.2. In environments in which enforcement is lax, moreover, it might be that analysts scrutinize managers' financial reporting choices more closely. Finally, lack of enforcement could enable managers to meet more easily analysts' forecasts by manipulation, as by smoothing earnings over time. As smooth earnings are likely to be associated with easier earnings forecasting, strong enforcement could be related to more variable earnings and, hence, lower forecast accuracy.[3]

3.3 DISCLOSURES AND ANALYST FOLLOWING

Disclosures provided in annual reports represent one part of firms' overall information environment. One proxy for a firm's information environment is its analyst following. I expect the importance of annual report disclosures in explaining forecast accuracy to vary with the number of analysts who follow the firm.[4] From a theoretical perspective it is not obvious whether disclosures and analyst following are substitutes or complements (e.g., see

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[3] However, I attempt to control for country-level variations in earnings surprise management (see section 5).

[4] Lang and Lundholm [1996, p. 486] find only limited (no) evidence that changes in firms' disclosure policies (analyst following) cause changes in analyst following (firms' disclosure policies).

Bushman and Smith [2001]).[5] However, prior empirical research finds forecast accuracy to increase with the number of analysts (e.g., Lys and Soo [1995]). Similarly, Botosan [1997] finds annual report disclosure levels to be negatively associated with cost of equity capital, but only for firms followed by few analysts. These empirical findings are consistent with the importance of the annual report in the communication process being greater for firms with fewer analysts. From this follows hypothesis 3:

H3: The quantity of annual report disclosure is less positively associated with forecast accuracy for firms that attract many analysts.

3.4 ENFORCEMENT AND THE EXTENT OF CHOICE AMONG ACCOUNTING METHODS

As discussed, I expect strong enforcement of accounting standards to make reporting decisions more predictable. In turn, this reduced uncertainty about firms' reporting choices makes forecasting easier. The impact of enforcement may, however, differ with other aspects of the financial reporting environment. I examine whether enforcement is particularly useful to analysts when firms are able to choose from a larger set of allowable accounting methods.

If accounting standards strictly limit the choice among accounting methods, analysts should face less uncertainty about which accounting methods are used in arriving at reported earnings numbers. Also, to the extent that a large number of allowable accounting methods contributes to higher task complexity for analysts (e.g., Ashbaugh and Pincus [2001]), strong enforcement should help ensure that consistent methods are employed over time, easing some of the forecasting complexity. Both of these arguments support the idea that enforcement of accounting standards is more useful (in explaining forecast accuracy) when there is greater choice among accounting methods, and lead to hypothesis 4:

H4: Enforcement is more positively related to forecast accuracy when firms can choose among a larger set of accounting methods.

The relation between enforcement and the number of allowable accounting methods is, however, likely to be complex.[6] For example, if enforcement is weak, the allowable number of accounting methods may not mean much, as managers have significant reporting discretion in such environments. Strong enforcement can presumably constrain potential abuse or

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[5] Analyst services have both a demand and a supply side. On the one hand, expanded disclosure, such as more refined segment disclosure, potentially enables analysts to create valuable new information and hence increases the demand for analyst services. On the other hand, disclosure could preempt analysts' ability to distribute managers' private information to investors, leading to a decline in demand (e.g., Healy and Palepu [2001], Hope [2003]). The net effect of these (and other) forces is theoretically ambiguous.

[6] Basu, Hwang, and Jan [1998] and Hope [2001] discuss the relation between forecast accuracy and extent of choice in accounting in detail.

manipulation of the flexibility stemming from being able to choose from several accounting methods.[7] It may also be that choice in accounting per se may make analysts' tasks more difficult because of higher task complexity (Ashbaugh and Pincus [2001]), regardless of enforcement level.

4. Measurement of Test and Dependent Variables[8]

4.1 ANNUAL REPORT DISCLOSURES

In this study I use the Center for International Financial Analysis and Research (CIFAR [1993, 1995]) evaluations of corporate disclosure levels for leading nonfinancial companies in several countries. Using this source, I can, unlike previous research, investigate effects of variations in *firm*-level disclosures in an across-country setting. I use the total CIFAR disclosure score, which is constructed from 85 annual report variables. The Appendix gives details of the CIFAR scores and reports the results of extensive validity tests.

4.2 ENFORCEMENT

There is no straightforward and uncontroversial way to measure the strength of enforcement of accounting standards.[9] I construct a comprehensive measure of enforcement based on five country-level factors: audit spending, insider trading laws, judicial efficiency, rule of law, and shareholder protection. For each of these variables, a higher score denotes stronger enforcement. I aggregate the factors into one score by factor analysis. Consistent results obtain when I assign equal weights to each variable. I also present results with an alternative measure of enforcement (that excludes audit spending but includes two firm-level variables: audit firm type and stock exchange listings).

A country's commitment to enforcement can be partially gleaned by assessing how much it spends on audit services relative to the economy as a whole. More spending on external auditing is expected to be associated with stronger audit firms and closer compliance with accounting standards. Audit spending is measured as the total fees of a country's 10 largest auditing firms as a percentage of gross domestic produce (GDP) for 1990 (Mueller, Gernon, and Meek [1994]). This is not a perfect measure of the role of auditing because it covers only the top 10 audit firms[10] and, to a lesser

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[7] The effect of such manipulation on forecast accuracy depends on the nature of the manipulation. Manipulation that involves smoothing earnings is likely to be positively related to forecast accuracy, whereas other types of manipulation (such as switching between methods to maximize bonus payments) have unclear relations with forecast accuracy.

[8] Table 1 summarizes the variables used in the paper.

[9] The difficulty in measuring enforcement arises in part because enforcement takes different forms in different countries. As Ball [2001, p. 128] puts it, "The accounting infrastructure complements the overall economic, legal and political infrastructure in all countries."

[10] According to Ali and Hwang [2000], data on audit fees for *all* accounting firms are not available.

extent, because it scales audit fees by GDP rather than by some measure of the size of listed firms. In addition, audit fees can reflect factors other than audit quality, such as cost drivers and litigation risk (e.g., Simunic [1980], Seetharaman, Gul, and Lynn [2002]). This metric is nevertheless used in previous research with results as predicted (e.g., Ali and Hwang [2000]).

Insider trading laws may deter managers from manipulating earnings to profit from trading in the firm's stock. Beneish and Vargus [2000] provide evidence that insider trading is related to earnings management. Bhattacharya and Daouk [2002] document that insider trading laws exist in 87 of the 103 countries in their sample, but enforcement (i.e., prosecutions) occurs in only 38 countries. Consistent with Bhattacharya and Daouk, I assign a score of 1 if a country had a law prohibiting insider trading, and 0 otherwise. Similarly, I assign a score of 1 if a country had prosecuted against insider trading, and 0 otherwise. The score included in the enforcement metric is the sum of the existence and enforcement of insider trading laws.

The third component of enforcement, judicial efficiency, measures the "efficiency and integrity of the legal environment as it affects business" (La Porta et al. [1998, p. 1124]). A country's judicial system might be functioning well but enforcement of accounting regulations lacking. It is difficult, however, to think of a situation in which the judicial system in general works poorly but enforcement of accounting standards is strong. The assessments of judicial efficiency produced by the country-risk rating agency Business International Corporation "may be taken to represent investors' assessments of conditions in the country in question" (La Porta et al. [1998, p. 1124]).

The fourth component of enforcement, rule of law, assesses a country's law and order tradition (La Porta et al. [1998, p. 1124]). If no one cares, regulations covering the content of financial reports are not likely to be effective. Assessments of law and order tradition are produced by the country-risk rating agency International Country Risk. Both judicial efficiency and rule of law are on a scale from 0 to 10, with lower scores for lower efficiency levels and less tradition for law and order, respectively.

Finally, Hung [2000] and Ball [2001] argue that strong shareholder protection should attenuate management opportunism in financial reporting. Managers in weak shareholder protection environments are more likely than managers in strong shareholder protection environments to manipulate earnings. For example, mechanisms by which shareholders might sue directors for losses incurred because of manipulated financial reports are more plentiful in the United States than in Germany (Hung [2000], La Porta et al. [1998]). Hence, the higher anticipated cost to managers of engaging in manipulation in the United States might be expected to deter such behavior.[11] I employ the same La Porta

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[11] However, the potential payoffs from engaging in such behavior can also vary across countries.

et al. [1998] measure of shareholder protection (or antidirector rights) as Hung.[12]

Because of the limitations of country-level audit spending in capturing the quality of the auditing regime noted earlier, I also present results with an alternative measure that excludes audit spending. This alternative model is augmented with audit firm type and stock exchange listings. As previously discussed, this measure is based on factor analysis of the six components. Equally weighting the components yields similar empirical results.

I expect Big 6 auditors to be better enforcers of accounting standards, both because of their greater expertise and the value of their brand-name reputations (e.g., Francis, Maydew, and Sparks [1999], Becker et al. [1998]). In defining auditor type, I distinguish between Big 6 and other auditors.[13] I include stock exchange listings because in some jurisdictions the stock exchange serves as the primary enforcer of accounting standards. A firm from a country with weak insider trading laws or other judicial weaknesses may be subjected to strong enforcement if it is listed on exchanges that exert such controls. For example, an Italian firm may list on the New York Stock Exchange (NYSE) to lower its cost of equity capital (or for other reasons). Listing on NYSE subjects the firm to scrutiny by the Securities and Exchange Commission (SEC), and any sanctions imposed by the SEC for improper reporting could endanger the firm's listing status and, hence, be very costly. In fact, Ball [2001, p. 167] argues that listing on a prestigious exchange is a more credible signal of information quality than adopting other accounting standards (e.g., U.S. GAAP or IAS), in part because such a listing exposes the firm to greater litigation. I include a detailed variable measuring the number of stock exchanges on which a firm is listed.[14] Including audit firm type and stock exchange listings comes at a cost, however, in that these variables may be viewed as managerial choice variables.

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[12] La Porta et al. [1998] form their index by adding one point when each of the following is true: (1) shareholders can vote by mail, (2) shareholders are not required to deposit their shares before shareholder meetings, (3) cumulative voting is allowed, (4) the minimum percentage of share capital that entitles a shareholder to call an extraordinary shareholder meeting is less than 5%, and (5) minority shareholders are allowed to make legal claims against the directors (La Porta et al. [1998, pp. 1127–28]).

[13] I also have finer partitionings of audit firm type, but using these does not affect the reported results. Today's Big 4 audit firms were the Big 8 and then Big 6 during the sample period.

[14] The stock exchange variable summarizes all the major stock exchanges on which a firm was listed during the sample period. Listings on domestic exchanges, European (other than London), London, Asian, and American listings are recorded. For U.S. firms, listings on London Stock Exchange and Tokyo Stock Exchange have been recorded in addition to domestic listings. Listings on U.S. exchanges are given weight of 1.5, whereas all other listings, including ADRs (without exchange listing) are given weight 1, and the scores for each firm are summed.

4.3 ACCOUNTING CHOICE AND ANALYST FOLLOWING

To measure the extent of choice between accounting methods allowed by domestic GAAP, I use the country-level variable constructed by Basu, Hwang, and Jan [1998], who assign a score between 0 (no choice) and 2 for each accounting area, sum the scores across all dimensions, and assign ranks to countries.[15] The areas they include are the accounting for corporate acquisitions, amortization of goodwill, inventory, research and development, deferred taxes, investment in securities, foreign currency translation, fixed-asset revaluation in excess of cost, and marketable debt securities. Analyst following is the number of analysts reporting to IBES, averaged over fiscal months 4–12.

4.4 DEPENDENT VARIABLE

Following Lang and Lundholm [1996], forecast accuracy is defined as:

$$\frac{-|Actual\ EPS - Forecasted\ EPS|}{Beginning\text{-}of\text{-}fiscal\text{-}year\ stock\ price}$$

Both forecasted and actual earnings per share are from IBES Domestic and International Summary Files. Forecast accuracy is computed as the simple average of the measure across the months included in the testing window (see Lang and Lundholm [1996, p. 477]). I deflate by stock price to facilitate comparisons across firms.[16]

Because the annual report information needs to be available to analysts at the time their forecasts are issued, I examine the accuracy of forecasts issued after the release of the annual reports. CIFAR [1995, vol. II] has countrywide statistics on the timing of the publication of the annual reports relative to the fiscal year-end. These statistics are based on the same firms for which it provides annual report disclosure scores. Based on these statistics, which are corroborated by Frost and Ramin [1997], I use consensus forecasts of annual earnings made in months 4–12 following the fiscal year-end. In section 6.5 I test whether results are sensitive to this choice of forecast horizon.

5. Control Variables

Table 1 summarizes and defines the control variables. I control for variations in GAAP regimes and earnings predictability. I also control for other firm- and country-level factors that may affect the accuracy of analysts' earnings forecasts.

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[15] I have inverted Basu et al.'s [1998] scoring so that a higher value means greater choice among accounting methods.

[16] Using mean EPS (rather than stock price) as a scaling factor does not materially affect results.

TABLE 1
Variables Used

Variable	Explanation	Data Source(s)
Forecast accuracy	The negative of the absolute difference between actual EPS and analysts' forecasts (averaged over fiscal months 4–12) scaled by stock price. (Winsorized at −1.)	IBES
Disclosures	Firm-level total annual report disclosure scores. See the Appendix.	CIFAR [1993, 1995]
Enforcement	Degree of enforcement of accounting standards. Measure based on factor analysis of (1) country-level audit spending, (2) judicial efficiency, (3) rule of law, (4) insider trading laws (existence and enforcement), and (5) shareholder protection (antidirector rights). Alternative measure excludes (1) but includes two firm-level variables: stock exchange listings and audit firm type (see below).	La Porta et al. [1998], Mueller, Gernon, and Meek [1994], Bhattacharya and Daouk [2002], CIFAR [1995]; see Note
Stock exchange listings	Summary of all the major stock exchanges on which a firm was listed during the sample period. Listings on domestic exchanges as well as European (other than London), London, Asian, and U.S. listings are recorded. For U.S. firms, listings on the London Stock Exchange and Tokyo Stock Exchange have been recorded in addition to domestic listings. Listings on U.S. exchanges are given a weight of 1.5, all other listings, including ADRs (without exchange listing) are given a weight of 1, and the scores for each firm are summed.	See Note; various Web-based sources; direct contact with firms
Analyst following	The number of analysts averaged over fiscal months 4–12.	IBES
Extent of choice among accounting methods	Country ranking of number of accounting methods allowed in nine areas: investment in securities, corporate acquisitions, amortization of goodwill, inventory, deferred taxes, research and development, marketable debt securities, fixed asset revaluation in excess of cost, and foreign currency translation. A higher score means more choice (i.e., the scale has been inverted from the Basu, Hwang, and Jan [1998] scale).	Basu, Hwang, and Jan [1998]; self-scored for Nordic countries; Austria and Switzerland assumed equal Germany, New Zealand equal Australia and Belgium equal France (see Hope [2001]).
Firm size	Market value of equity in 1993 U.S.$ millions.	See Note
Earnings change	The absolute value of the change in earnings over the previous year scaled by the previous year's earnings.	IBES
Negative earnings	Indicator variable for loss firms.	See Note
Industry	Nine indicator variables for IBES industry sectors.	IBES

TABLE 1 — *Continued*

Variable	Explanation	Data Source(s)
Uncertainty avoidance	The degree to which people feel uncomfortable with ambiguity and an uncertain future.	Hofstede [1980]
Individualism	A preference for a loosely knit social fabric or an independent, tightly knit fabric.	Hofstede [1980]
Domestic listed firms	The number of domestic listed firms divided by population in 1995. A measure of the importance of the stock market.	La Porta et al. [1997]
Earnings surprise management	Country scores of earnings management for the first half of the 1990s. Computed as the ratio of small (5%) positive earnings surprises to small negative earnings surprises.	Brown and Higgins [2001]
Common law	Indicator variable equal to 1 for common law legal origin, and 0 otherwise.	La Porta et al. [1997]
French, German, and Nordic legal system	Indicator variables for French, German, and Nordic code law systems (with common law as the reference group)	La Porta et al. [1997]
Concentration	Country-level measure of ownership concentration. Measured as the mean fraction of the firms' voting rights owned by the controlling shareholder.	La Porta, Lopez-de-Silanes, and Schleifer [1999]
Leverage	Total liabilities divided by total assets.	See Note
ROE	Net income divided by shareholders' equity.	See Note
Parent only	Indicator variable for firms that issue only parent financial statements.	See Note
Auditor	Indicator variable for Big 6 (/Big 8) auditor.	See Note

Firm-level data are from Datastream, Global Vantage, Compustat/CRSP, Moody's International, Global Access/ISI, S&P, CIFAR Global Company Handbook, various stock exchanges, Bank of New York, IBES, ETLA, and other sources.

5.1 GAAP REGIMES AND EARNINGS PREDICTABILITY

Earnings may not be equally predictable across all countries and firms (even with identical information sets). One way of classifying earnings predictability is: lines of business and/or economic circumstances differ across countries, and the GAAP regime under which the firm reports.[17] I include control variables that attempt to capture variation due to this heterogeneity.

To the extent that firms within a given country are similar, the inclusion of country indicator variables controls for cross-country variation in economic circumstances. Therefore, country indicators are included in one of the models presented. Similarly, to the extent that firms within a given industry are similar, including an indicator variable for industry membership controls for line-of-business differences in the compositions of country samples. Some industries are more stable than others and, hence, more amenable to earnings forecasting. IBES industry indicator variables are included in all models.

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[17] I thank Peter Pope for suggesting this characterization of earnings predictability.

With respect to differences in GAAP regimes, the issues relate to variations in earnings management and variations in legal environment that affect the timeliness of earnings. Cross-country variations in earnings forecasts likely reflect variations in management incentives and ability to manage earnings. Ball, Kothari, and Robin [2000] and Leuz, Nanda, and Wysocki [2001] argue that income smoothing is more prevalent in code law than in common law countries because of differences in accounting rules, corporate governance, and legal environment. Both studies present evidence consistent with this hypothesis. Several studies (e.g., Barth, Elliott, and Finn [1999]), however, find that investors reward U.S. firms for reporting smooth earnings, and examples abound of earnings management by firms in the United States and other common law countries (e.g., Peasnell, Pope, and Young [2000], Healy and Whalen [1999], Black, Sellers, and Manly [1998]). Brown and Higgins [2001] report that U.S. managers are more likely than managers in other countries to engage in earnings management. In light of the foregoing, I include a country-level measure of earnings surprise management from Brown and Higgins and expect this variable to be positively associated with forecast accuracy.[18]

Building on Basu [1997], Ball, Kothari, and Robin [2000] investigate the way accounting incorporates economic income over time using a sample of companies from common law (Australia, Canada, United Kingdom, and United States) and code law (France, Germany, and Japan) countries. They argue that the demand for accounting income varies with "shareholder" and "stakeholder" corporate governance models. Specifically, the authors find evidence consistent with international differences in the asymmetric timeliness of earnings.[19] Of particular relevance to the present study, Ball, Kothari, and Robin find that firms in common law countries are more likely to reflect economic losses in earnings in a timely manner, introducing large negative transitory components in earnings of some firms. Such components may make earnings less predictable (unless analysts in these environments are especially attuned to this possibility). Based on the evidence in Ball, Kothari, and Robin, it would be desirable to condition on the likelihood that firms experience current or past good or bad news, for example, based on stock returns. Unfortunately, data limitations preclude the inclusion of such a control variable. Instead, I include the following control variables for variations in timeliness of earnings: corporate governance model, the existence

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[18] Brown and Higgins [2001] compute earnings surprise management as the ratio of small (5%) positive earnings surprises to small negative earnings surprises.

[19] Pope and Walker [1999] formally model asymmetric timeliness and empirically examine delayed recognition of good and bad news. They show that the results in Ball, Kothari, and Robin [2000] may be sensitive to the choice of earnings number used. Specifically, Pope and Walker find that the difference in timeliness of earnings between U.S. and U.K firms reported by Ball, Kothari, and Robin depends on whether earnings are measured before or after extraordinary items.

of losses, and earnings variability. As a proxy for international variations in corporate governance, I include a country-level metric of the relative importance of the stock market, namely, the number of domestic firms divided by population (from La Porta et al. [1997]).[20] I expect a positive relation to forecast accuracy. To provide an alternative measure, I also present results with common law legal system as a control variable, where common law is an indicator variable equal to 1 if the firm is from a common law country, and 0 otherwise. Similarly, losses equal 1 if earnings are negative, and 0 otherwise. I also include a measure of earnings variability, measured as the scaled change in earnings from the previous year.[21] As proxies for analysts' task complexity, I expect losses and earnings variability to be negatively correlated with forecast accuracy.

5.2 OTHER CONTROL VARIABLES

In addition to the control variables for GAAP regimes and earnings predictability, I include controls for stock exchange listings, analyst following and firm size at the firm level, and culture at the country level.

I control for stock exchange listings for several reasons. Firms that are listed on several (and more "prestigious") exchanges are likely to be subjected to more pressure from capital markets. There is greater investor interest in such firms and typically more information than other annual report disclosures available about these firms. Stock exchange listings are also reasonable proxies for the use of nondomestic accounting standards (e.g., IAS or U.S. GAAP).

Lys and Soo [1995] argue that the number of analysts proxies for the intensity of competition in the market. Consequently, the number of analysts per firm is included to control for incentives to forecast accurately. I expect a positive relation between analyst following and forecast accuracy. In my sample, average forecasts in all countries are positively biased but not significantly different from 0, consistent with analysts' facing similar incentives across the sample countries. Both stock exchanges and financial analysts could be viewed as elements of the overall enforcement mechanism for accounting standards.[22] Including these two control variables means I am testing whether enforcement, beyond stock exchanges and analysts, matters in explaining variations in forecast accuracy.

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[20] Similar to Ball, Kothari, and Robin [2000], Nobes [1998, pp. 19–21] argues that the distinction between creditor/insider and equity/outsider countries is a key cause of international differences in financial reporting.

[21] There is a mechanical relationship between earnings change and forecast accuracy because of the way they are defined. Excluding earnings change reduces the overall explanatory power of the tests but does not affect the significance of the test variables. Because of data limitations I cannot compute a time-series standard deviation of return on equity.

[22] Financial analysts with proper training and experience may contribute to more effective enforcement of accounting standards by detecting irregularities and discussing these with management, writing about them in their investment reports, or both.

I also control for firm size, which is used in the literature as a proxy for several factors. To the extent that size reflects information availability about a firm (other than through annual reports), a positive relation to forecast accuracy is expected. However, firm size can also proxy for a host of other factors, such as managers' incentives, for which predictions for the relation with forecast accuracy are unclear.

Variations in national cultures are shown to affect managers' financial reporting behavior (e.g., Salter [1998], Hope [2003c]) and could influence financial analysts' earnings forecasting (e.g., Rees, Swanson, and Clement [2000]).[23] I include uncertainty avoidance and individualism, two of Hofstede's [1980] constructs that are widely used in accounting research (e.g., Gray [1988]).[24] I do not have predictions for the signs of these two variables.[25]

6. Empirical Analysis

The hypotheses are tested in the following general empirical model:

$$Forecast\ accuracy = f\ (Disclosures,\ Enforcement,\ Interaction\ effects,$$

$$Control\ variables)$$

This model is referred to as "the traditional cross-country regression" by Bushman and Smith [2001], augmented with firm-level variables. An advantage of a cross-country design is that it allows for sufficient in-sample variation, as there are considerable, quantifiable cross-country differences in financial accounting regimes (Bushman and Smith [2001]). That previous research documents significant cross-country differences in analysts' earnings forecast accuracy suggests that meaningful economic variations might

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[23] For example, Rees, Swanson, and Clement [2000] argue that some societies view employer-employee relationships like a family link. As a result, employees (such as financial analysts) may not have to demonstrate superior performance to keep their jobs.

[24] Hofstede [1980], in a massive cross-cultural study of employees at a large multinational firm, finds significant national differences in work-related values. Hofstede defines four dimensions of culture that differ across countries. Uncertainty avoidance measures the degree to which a society feels uncomfortable with ambiguity and an uncertain future. Individualism (vs. collectivism) expresses a preference for a loosely knit social fabric or an independent, tightly knit fabric. Including either or both of Hofstede's other work-related values, power distance and masculinity, does not affect reported results.

[25] Analysts' abilities might vary across countries and individuals. I include control variables (such as analyst following, firm size, industry, culture measures, and country dummies) that may pick up some of this variation. An implicit assumption in the paper is that any remaining variation in ability is not correlated with disclosures or enforcement. One source of variation in ability could be the nationality or location of the analysts making the forecasts, on which I do not have data. However, Capstaff, Paudyal, and Rees [1998] and Larran and Rees [1996] find no substantive differences in the behavior of the forecasts produced by local and foreign analysts for German and Spanish firms, respectively. Based on these findings, I assume that the location of the analyst providing the forecast is not important for this study.

be attributable to variations in disclosure practices and to the infrastructure of financial reporting.

Table 1 summarizes definitions and data sources of the variables used. In what follows, I explain sample selection and present descriptive statistics. I then follow with univariate and multivariate analyses. Finally, I report the results of robustness tests.

6.1 SAMPLE

Panel A of table 2 summarizes the sample selection. The main constraint on sample size is the availability of annual report disclosure scores. There are 1,992 observations (from 1,434 firms) in CIFAR (1993, 1995).[26] CIFAR (1993, 1995) covers fiscal years 1991 and 1993 (see the Appendix for details). Not all of these firms had IBES coverage during the sample period. Consequently, there are 1,553 observations (1,100 firms) for which disclosure scores and forecast data are available. Requiring data on enforcement reduces the sample to 1,351 observations with data available for ordinary least squares (OLS) tests. Finally, requiring data on control variables reduces the sample to 1,309 observations. Some of the firms have data for two years, and I report results both for the pooled sample and for the sample of 890 firms.

6.2 DESCRIPTIVE STATISTICS

Panel B of table 2 presents descriptive statistics for analyst data, test variables, and control variables. For tests that require data on the extent of choice among accounting methods, I lose observations from Italy, Portugal, South Africa, and Spain. The mean absolute forecast error (i.e., the negative of forecast accuracy as defined in section 4.3) for the overall sample is 3.5% of stock price, with a standard deviation of 11%. The mean forecast accuracy is highest in Australia and the United States and lowest in Spain, Portugal, and Switzerland (panel C of table 2).

CIFAR's scores are on a 0 to 100 scale, and the in-sample range of country averages is from 58.1 for Portugal to 83 for the United Kingdom. Sample firms from the United Kingdom, Sweden, and Finland have the highest mean total disclosure scores, and Portugal, Austria, and Germany have the lowest scores (broadly consistent with the rankings in Meek, Roberts, and Gray [1995]).

The United States, United Kingdom, and Canada have the highest enforcement scores; Spain and Italy have the lowest (see table 2, panel D). For the sample with data available on choice among accounting methods, Germany and Austria have the lowest enforcement scores. These rankings seem consistent with Gebhardt [2000], who concludes that sanctions against

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[26] Using a large number of sources (see note to table 1), I have been able to find firm-level financial data for all but 18 firms.

TABLE 2
Sample and Descriptive Statistics

Panel A: Sample

Observations for which annual report scores are available in CIFAR [1993, 1995]	1,992
Less: Missing analyst forecast data	439
Observations for which disclosure scores and forecast data are available	1,553
Less: Missing control variables	244
Number of observations in pooled sample	1,309
Number of observations in sample with only one observation per firm	890

Panel B: Descriptive statistics

			Percentiles		
	Mean	Std. Dev.	25	50	75
Forecast accuracy	−0.035	0.110	−0.019	−0.006	−0.002
Disclosure scores	74.7	7.9	70	75	80
Enforcement	0.17	1.39	−0.25	0.70	1.21
Stock exchange listings	1.8	1.1	1	1	2
Analyst following	18.1	9.5	11.0	17.2	24.3
Firm size (in millions, 1993 dollars)	6,243	10,240	968	2,869	7,224
Extent of choice in accounting	5.4	2.9	2	6	7.5
Earnings change	0.36	0.36	0.10	0.22	0.60
Negative earnings	0.16	0.36	0	0	0
Earnings surprise management	1.54	0.42	1.18	1.62	1.99

Panel C: Descriptive statistics, by country[a]

	Accuracy	Disclosure	Analysts	Size	N
Australia	−0.008	80.6	13.3	2,734	45
Austria	−0.084	60.7	7.3	365	15
Belgium	−0.024	69.5	12.6	2,608	14
Canada	−0.024	76.7	17.8	4,778	19
Denmark	−0.053	72.9	13.2	966	15
Finland	−0.098	81.0	10.5	662	18
France	−0.041	77.0	22.8	3,890	74
Germany	−0.074	67.8	28.5	4,301	55
Hong Kong	−0.049	73.0	22.9	3,930	24
Ireland	−0.018	80.6	5.0	388	10
Italy[b]	−0.083	68.0	17.3	1,374	18
Japan	−0.013	70.9	10.8	8,828	190
Netherlands	−0.089	73.2	30.2	6,069	29
New Zealand	−0.049	78.2	9.2	746	11
Norway	−0.089	78.0	16.1	942	23
Portugal[b]	−0.175	58.1	5.5	220	7
South Africa[b]	−0.046	75.9	3.9	1,053	32
Spain[b]	−0.180	69.7	23.0	3,166	24
Sweden	−0.044	83.0	17.3	1,488	27
Switzerland	−0.151	76.1	25.1	3,308	25
United Kingdom	−0.040	83.1	16.8	7,124	141
United States	−0.011	73.8	20.7	8,459	493

T A B L E 2 — *Continued*

Panel D: Descriptive statistics for enforcement (and its components) and choice[c]

Country	Enforce	AudSp	ITLs	Jud	Rule	Anti	Choice
Australia	−0.25	0.48	1	10.00	8.52	4	5
Austria	−1.65	0.14	0.5	9.50	10.00	2	7
Belgium	−1.89	0.18	1	9.50	10.00	0	8
Canada	0.98	0.41	2	9.25	10.00	5	3.5
Denmark	−0.56	0.43	1	10.00	10.00	2	7.5
Finland	−0.22	0.12	1.5	10.00	10.00	3	7.5
France	−0.99	0.20	2	8.00	8.98	3	8
Germany	−2.92	0.15	0	9.00	9.23	1	7
Hong Kong[d]	0.10	0.54	1	10.00	8.22	5	3.5
Ireland	−0.78	0.70	1	8.75	7.80	4	6
Italy	−3.55	0.10	1	6.75	8.33	1	.
Japan	0.16	0.07	2	10.00	8.98	4	10
Netherlands	−0.19	0.68	1	10.00	10.00	2	9
New Zealand	0.24	0.48	1	10.00	10.00	4	5
Norway	0.70	0.21	2	10.00	10.00	4	7.5
Portugal	−3.21	0.18	1	5.50	8.68	3	.
South Africa	−3.39	0.35	1	6.00	4.42	5	.
Spain	−3.65	0.16	0	6.25	7.80	4	.
Sweden	0.55	0.36	2	10.00	10.00	3	7.5
Switzerland	−0.39	0.55	1	10.00	10.00	2	7
United Kingdom	1.16	0.60	2	10.00	8.57	5	6
United States	1.21	0.31	2	10.00	10.00	5	2

Panel E: Details of enforcement variable[e]

	Enforcement	Alternative Measure of Enforcement
Audit spending	0.25	
Insider trading	0.54	0.46
Judicial efficiency	0.52	0.53
Rule of law	0.36	0.49
Antidirector rights	0.49	0.38
Audit firm type		0.30
Stock exchange listings		0.18

[a]See table 1 for definitions of variables. Means per country are reported.

[b]Data on choice among accounting methods are not available for these countries. Tests involving choice are based on the remaining sample countries.

[c]Enforce = enforcement (see table 1); AudSp = audit spending (Mueller, Gernon, and Meek [1994]); ITLs = sum of existence and enforcement of insider trading laws (Bhattacharya and Daouk [2002]); Jud = judicial efficiency (La Porta et al. [1998]); Rule = rule of law (La Porta et al. [1998]); Anti = antidirector rights (a measure of shareholder protection; La Porta et al. [1998]); Choice = choice among accounting methods (see table 1).

[d]Data are not available on country-level audit spending for Hong Kong in Mueller, Gernon, and Meek [1994]. For Hong Kong, country-level audit spending is derived from CIFAR [1995; tables 3–6: Audit fees percentage]. Similar results obtain regardless of whether Hong Kong is included based on this measure. (Data are available for Singapore for all factors except country-level audit spending. Results are consistent with those reported when Singapore is included using an enforcement variable that excludes audit spending.)

[e]Scoring coefficients of first factor of unrotated principal components factor analysis.

noncompliance with accounting standards are weak in Germany.[27] Panel D also shows the country-by-country data for the components of the enforcement variable (as well as descriptive statistics on choice among accounting methods). Panel E shows the details of the factors included in the enforcement measure and the alternative measure.

Dutch and German firms have the highest number of analysts (consistent with Basu, Hwang, and Jan [1998]). The CIFAR sample firms are among the largest from each sample country (see the Appendix).[28] There is nevertheless considerable variation in firm size as measured by market capitalization (see panels B and C of table 2). U.S. firms are, on average, significantly larger than non-U.S. firms. On average, earnings changes for U.S. firms are smaller than non-U.S. firms (not shown), which could be due to a more stable economic environment in the United States, but it is also consistent with evidence in Brown and Higgins [2001] that U.S. managers are more likely to engage in income smoothing.

6.3 UNIVARIATE RELATIONS

Table 3 reports that the extent of annual report disclosures is significantly and positively correlated with forecast accuracy (0.14), consistent with H1 that annual report disclosures are useful to financial analysts in forecasting earnings. Consistent with H2, enforcement is positively correlated with forecast accuracy (0.21). Also, note the positive correlation between disclosure scores and enforcement (0.31). This is consistent with the intuition that enforcement should be associated with higher financial disclosure, at least for mandatory items.

Of the control variables, earnings change has the highest correlation with forecast accuracy (−0.24). Large earnings changes due to, for example,

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[27] The enforcement index is significantly negatively correlated (−0.71 and −0.64) with measures of earnings discretion and income smoothing from Leuz, Nanda, and Wysocki [2001, table 2], suggesting that earnings management is more pervasive in countries where the enforcement is low. Table 3 shows, however, that enforcement is positively correlated (0.60) with earnings surprise management from Brown and Higgins [2001]. I use the latter measure as a control variable as it (Leuz, Nanda, and Wysocki [2001]) is significantly negatively (positively) correlated with earnings change and positively correlated (negatively) with forecast accuracy, suggesting that the Brown and Higgins measure better captures the essence of managed earnings in my sample. Using either or both of Leuz, Nanda, and Wysocki's measures as controls does not affect any inferences in this paper.

[28] CIFAR selected the "leading industrial companies" in each country (see Appendix). Consistent with its claim, mean (median) market capitalization of U.S. sample firms in 1993 was $9.5 billion (4.6 billion), compared with $6.6 billion (3.4 billion) for the S&P 500 and $0.9 billion (86 million) for all Compustat firms. Mean (median) return on equity was 0.07 (0.11) for U.S. sample firms, 0.13 (0.13) for the S&P 500, and 0.00 (0.08) for all Compustat firms. Mean (median) leverage (i.e., total liabilities divided by total assets) was 0.66 (0.66) for U.S. sample firms, 0.63 (0.63) for the S&P 500, and 0.54 (0.55) for all Compustat firms. Hence, U.S. sample firms are comparable with S&P 500 firms, but not necessarily with the universe of U.S. firms. Because of data limitations, it is difficult to make similar comparisons for non-U.S. firms.

TABLE 3
Correlations

	Accur.	Disc.	Enforce	Exch.	An. foll.	Choice	Size	ΔEarn.	Loss	Unc. Av.	Indiv.	Listed
Disclosures	0.14											
Enforcement	0.21	0.31										
Stock exchange listings	0.09	0.38	0.07									
Analyst following	0.14	0.18	0.04	0.26								
Extent of choice	-0.12	-0.04	-0.55	0.14	-0.24							
Firm size	0.12	0.14	0.18	0.17	0.41	-0.08						
Earnings change	-0.24	-0.12	-0.12	0.03	-0.17	0.25	-0.15					
Negative earnings	-0.13	-0.06	-0.01	-0.03	-0.05	-0.03	-0.08	0.36				
Uncertainty avoidance	-0.05	-0.24	-0.38	0.05	0.00	0.75	0.00	0.19	-0.05			
Individualism	0.11	0.36	0.51	0.05	0.00	-0.56	0.14	-0.19	0.05	-0.65		
Domestic listed firms	0.11	0.26	0.42	0.15	0.00	-0.41	0.02	-0.17	-0.06	-0.32	0.17	
Earnings surprise mgmt	0.19	0.05	0.60	-0.07	0.18	-0.76	0.20	-0.18	0.02	-0.50	0.64	0.20

See table 1 for explanations of variables. Accur is the accuracy of analysts' earnings forecasts. All Pearson correlations are significant at the 5% level (two-tailed) or better except for those in italics. Spearman correlations (not shown for brevity) are consistent with Pearson correlations.

sudden changes in competitive environments or accounting choices such as "big baths" complicate earnings forecasting. Alternatively, large (negative) earnings changes reflect the asymmetric accounting recognition of gains and losses (Basu [1997]). Negative earnings firms are also associated with lower forecast accuracy (-0.13), consistent with the findings of Hwang, Jan, and Basu [1996]. Incorporating these two variables in the regression thus also partially controls for international variations in the timeliness of earnings (Ball, Kothari, and Robin [2000]). The proxy for earnings surprise management is negatively correlated with earnings change (-0.18). This suggests that the earnings change variable captures what it is intended to, as managed earnings streams should be associated with smaller earnings changes. Earnings surprise management is significantly and positively correlated with accuracy (0.19), consistent with managed earnings being easier to forecast. Uncertainty avoidance (individualism) is negatively (positively) correlated with forecast accuracy. As predicted, my proxy for capital market pressure, domestic listed firms, is positively related to forecast accuracy. Because of the high correlations among some of the country-level variables, I report regression results both with and without country-level controls.

6.4 MULTIVARIATE TESTS

6.4.1. OLS Results. Table 4 provides OLS regression results for the relations between forecast accuracy and disclosures and enforcement. Based on the arguments in Bushman and Smith [2001] that the choice of country-level control variables can affect regression results in cross-country studies, I report results with different sets of control variables. Model 1 is the benchmark regression. Model 2 uses the alternative measure of enforcement. Model 3 uses an indicator for common law instead of the number of domestic listed firms as a proxy for corporate governance models. Model 4 replaces country-level control variables with country indicators. Model 5 includes only firm-level controls. Model 6 presents results with only one observation per firm.[29] One-sided *p*-values are reported for variables with predicted signs; otherwise, two-sided *p*-values are used. Standard errors are based on White [1980].

Consistent with H1 and the univariate results, model 1 shows that annual report disclosures are significantly and positively related to forecast accuracy, with a *p*-value of .02. Unreported results show that disclosures are significantly positive in both the U.S. and non-U.S. subsamples.[30] These findings suggest that analysts find such disclosures useful.

To compare these results with those of prior studies that investigate disclosures at the country level only (e.g., Basu, Hwang, and Jane [1998], Khanna,

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[29] Specifically, if two observations for a given firm are available, I use only the most recent observation (from CIFAR [1995]). The results are similar when only the oldest observations are included.

[30] Similarly, when estimating the regression separately for common law and code law countries, disclosures are significant in both regressions with *p*-values of 1% and 4%, respectively.

TABLE 4

OLS Regression Results for the Relation Between Forecast Accuracy and Disclosure Quantity and Enforcement

Panel A: Models 1 through 3

	Pred.	Model 1			Model 2			Model 3		
		Coef.	t	P > |t|	Coef.	t	P > |t|	Coef.	t	P > |t|
Disclosures	+	0.129	2.20	0.02	0.123	2.51	<0.01	0.130	2.20	0.02
Enforcement	+	1.231	3.03	<0.01	1.298	2.76	<0.01	1.081	2.58	<0.01
Stock exchange listings	+	0.617	2.97	<0.01				0.603	2.99	<0.01
Analyst following	+	0.128	2.93	<0.01	0.147	3.27	<0.01	0.130	2.97	<0.01
Firm size	?	−0.001	−2.00	0.05	−0.001	−2.15	0.03	−0.001	−1.94	0.05
Earnings change	−	−6.489	−4.57	<0.01	−6.414	−4.60	<0.01	−6.296	−4.57	<0.01
Negative earnings	−	−1.451	−1.10	0.14	−1.357	−1.04	0.15	−1.390	−1.03	0.15
Uncertainty avoidance	?	0.071	3.06	<0.01	0.059	2.86	<0.01	0.081	3.18	<0.01
Individualism	?	0.042	0.98	0.33	−0.003	−0.08	0.93	0.047	1.00	0.32
Domestic listed firms	+	−0.017	−0.70	0.24	−0.017	−0.71	0.24			
Common law	?							0.723	0.46	0.65
Earnings surprise management	+	3.088	2.50	<0.01	4.163	3.07	<0.01	2.962	2.09	0.02
Intercept		−13.73	−3.16	<0.01	−19.74	−3.50	<0.01	−15.33	−3.19	<0.01
N		1,309			1,323			1,309		
F		10			11			10		
Adj. R^2		0.12			0.12			0.12		

TABLE 4 — *Continued*

Panel B: Models 4 through 6

	Pred.	Model 4			Model 5			Model 6		
		Coef.	t	$P > \lvert t \rvert$	Coef.	t	$P > \lvert t \rvert$	Coef.	t	$P > \lvert t \rvert$
Disclosures	+	0.141	2.46	<0.01	0.122	2.05	0.02	0.131	2.29	0.01
Enforcement	+	1.212	2.29	0.01	1.443	4.33	<0.01	1.215	2.51	<0.01
Stock exchange listings	+	0.688	2.57	<0.01	0.434	2.19	0.02	0.382	1.78	0.04
Analyst following	+	0.124	2.97	<0.01	0.115	2.66	<0.01	0.177	3.08	<0.01
Firm size	?	−0.001	−2.30	0.02	−0.001	−0.16	0.88	−0.001	−2.04	0.04
Earnings change	−	−6.413	−4.60	<0.01	−6.169	−4.42	<0.01	−4.862	−2.52	<0.01
Negative earnings	−	−1.535	−1.18	0.12	−1.594	−1.21	0.12	−2.113	−1.25	0.11
Uncertainty avoidance	?							0.052	1.93	0.05
Individualism	?							0.011	0.21	0.84
Domestic listed firms	+							−0.029	−1.00	0.32
Earnings surprise management	+							3.440	1.96	0.03
Intercept		−0.676	−0.60	0.55	−2.459	−3.78	<0.01	−20.20	−3.14	<0.01
N		1,309			1,309			890		
F		8			11			7		
Adj. R^2		0.17			0.11			0.12		

See table 1 for explanations of variables. The dependent variable is financial analysts' earnings forecast accuracy. Nine industry indicator variables are included in all three models but not reported. The t-statistics are based on White [1980]. The p-values are one-sided for variables with predicted sign, two-sided otherwise. The coefficients have been multiplied by 100 and are thus expressed as percentages. Model 2 uses the alternative measure of enforcement that excludes country-level audit spending but includes stock exchange listings and audit firm type. Model 3 uses an alternative measure of corporate governance models: an indicator variable for common law (as opposed to code law) instead of the number of domestic listed firms. Model 4 includes 21 country indicator variables (with the U.S. as reference). Model 5 includes only firm-level control variables. Whereas models 1–5 are pooled regressions (i.e., with some firms represented twice), model 6 includes only one observation per firm.

Palepu, and Chang [2000]), I include the CIFAR country-average disclosure score as well as the firm-level variable. The estimated coefficient on the country-level variable is not significant, whereas the firm-level variable is significant and positive. Similarly, when I substitute the country-average score for the firm-level score, the coefficient is not significant (not tabulated). These results are consistent with there being significant variation in disclosures beyond country-level variation.

Recall that Adrem [1999] and Eng and Teo [2000] do not find a significant association between disclosure level and forecast accuracy using firm-level disclosure measures. Similarly, Lang and Lundholm [1996] do not find a significant relation between annual report information and forecast accuracy.[31] One possible reason for the stronger results in this study is that there is greater variation in disclosure scores in a multicountry sample.

H2 predicts that enforcement will be positively associated with forecast accuracy. Model 1 in table 4 shows that this hypothesis holds at better than the 1% level. The result is consistent with strong enforcement encouraging (or forcing) managers to follow the accounting rules that are in place, thereby reducing analysts' "accounting uncertainty" and, in turn, the task complexity of forecasting future earnings. This finding adds to the limited prior research on the effects of variations in enforcement of accounting standards internationally. Model 2 shows that the result for enforcement holds when the alternative measure of enforcement is used.

As expected, the percentage change in earnings over the previous year, "earnings change," is significantly and negatively related to forecast accuracy. Firms listed on more (and more "prestigious") stock exchanges have higher forecast accuracy. This is both consistent with such firms being more forthcoming to the investment community (e.g., by having investor relations departments) and with stock exchanges acting as enforcers of accounting standards. It is not surprising that firms that are followed by more analysts also have significantly higher forecast accuracy. Contrary to the univariate results, firm size is negatively related and uncertainty avoidance is positively related to forecast accuracy. As predicted, the estimated coefficient on earnings surprise management is significant and positive.

In model 3 an indicator for common law legal system replaces the number of domestic firms as a proxy for cross-country variations in corporate governance models (Ball, Kothari, and Robin [2000]).[32] In model 4

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[31] Lang and Lundholm [1996] find a significant and positive association between total AIMR ratings and forecast accuracy for a sample of U.S. firms. They do not find a significant association between annual report ratings and forecast accuracy when they also include other publications and investor relations. Because I use CIFAR rather than AIMR, I do not have data on the latter two variables.

[32] Previous research investigates the roles of the legal environment (e.g., Ball, Kothari, and Robin [2000]). Model 3 shows that the estimated coefficient on common law is not significant, whereas enforcement remains significant. Similarly, when I replace my aggregate enforcement measure with an indicator variable for common law, the estimated coefficient on legal system is insignificant (*p*-value of .85). These results suggest that my enforcement measure captures more than mere variations in legal environment.

country indicators are used instead of country-level control variables. Model 5 includes only firm-level controls. In model 6 there is only one observation per firm (i.e., the most recent observation). All these specifications yield results similar to those of model 1.

6.4.2. *Simultaneous Test of Disclosure Quantity and Forecast Accuracy.* Whereas accounting and disclosure standards specify minimum standards for disclosure, actual disclosure is likely to vary with a number of factors. Consistent with this, significant variation in disclosure levels is found in both within- and across-country studies (e.g., Meek, Roberts, and Gray [1995]). Thus, it is important to test whether the potential endogeneity of disclosures affects the relation between analysts' forecast accuracy and disclosure levels. As the Hausman [1978] test rejects exogeneity of disclosures at the 5% level, I test both the determinants of disclosure quantity and the effects of these on forecast accuracy in a system of equations.

The literature on determinants of disclosure levels is extensive and not reviewed here (e.g., see Adrem [1999], Saudagaran and Meek [1997], Marston and Shrives [1996]). The firm-level factors I consider for explaining disclosure quantity are (see table 1): stock exchange listings, size, profitability, leverage, analyst following, industry membership, auditor type, and forecast accuracy. In addition, I include an indicator variable for whether the firm issues only parent-company financial statements rather than consolidated group statements. At the country level I include variables that proxy for variations in legal systems, as these are shown to be associated with variations in disclosure levels (e.g., La Porta et al. [1998], Jaggi and Low [2000]). Specifically, I use indicator variables for French, German, and Nordic code law regimes, with common law countries as the reference group. I also include a measure of average firm ownership concentration. Ownership concentration varies considerably across countries, and I expect high concentration to be associated with reduced public disclosure.[33]

Table 5 reports the results of three-stage least squares (3SLS) analysis. Models 1 and 2 present results excluding and including interaction terms, respectively. In model 1, both annual report disclosure scores and degree of enforcement of accounting standards are positively associated with forecast accuracy at less than the 1% level, supporting the OLS findings.[34] Results for the control variables are generally similar to those reported in table 4.

It is not surprising that the extent of annual report disclosures is strongly and positively associated with the number and type of stock exchange listings. Disclosures are also positively related to firm size and negatively related

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[33] I have also considered richer models for explaining variations in disclosure levels, with both more firm-level and more country-level variables. I choose to present the more parsimonious model as results are not affected by the inclusion or exclusion of the additional explanatory variables.

[34] As with OLS (model 4), the 3SLS results are robust to only including one observation per firm.

TABLE 5
Simultaneous Equations Analysis (3SLS) of Forecast Accuracy and Annual Report Disclosure Quantity

| | Model 1 | | | | | | | | Model 2 | | |
| | Equation (1): Forecast Accuracy | | | | Equation (2): Disclosures | | | | Forecast Accuracy | | |
	Pred.	Coef.	z	P > |z|	Pred.	Coef.	z	P > |z|	Coef.	z	P > |z|
Disclosures	+	0.293	2.82	<0.01					0.313	2.38	0.01
Enforcement	+	1.163	2.73	<0.01					0.781	1.84	0.04
Disclosures*Analyst foll.	−								−0.274	−2.21	0.02
Enforcement*Choice	+								0.900	1.47	0.07
Choice	?								−4.594	−4.36	<0.01
Stock exchange listings	+	0.301	0.95	0.17	+	1.863	10.11	<0.01	0.810	2.67	<0.01
Analyst following	+	0.111	2.38	0.01	+	0.035	1.21	0.12	21.133	2.28	0.01
Firm size	?	−0.001	−1.27	0.20	+	0.001	1.91	0.03	0.001	0.08	0.94
Earnings change	−	−6.834	−7.11	<0.01					−6.727	−7.24	<0.01
Negative earnings	−	−0.613	−0.72	0.24					−0.537	−0.64	0.26
Uncertainty avoidance	?	0.090	4.10	<0.01					0.092	3.98	<0.01
Individualism	?	0.025	0.63	0.53					−0.008	0.19	0.85
Domestic listed firms	+	−0.031	−1.38	0.09					−0.078	−2.97	<0.01
Earnings surprise mgmt	+	4.077	2.69	<0.01					1.435	0.92	0.18
ROE					?	0.393	0.35	0.73			
Leverage					?	2.058	1.63	0.10			
Auditor					+	−0.011	−0.02	0.99			
Parent company					−	−10.80	−3.88	<0.01			
Forecast accuracy					?	0.030	0.52	0.60			

TABLE 5 — *Continued*

| | Model 1 | | | | | | | | Model 2 | | |
| | Equation (1): Forecast Accuracy | | | | Equation (2): Disclosures | | | | Forecast Accuracy | | |
	Pred.	Coef.	z	P > |z|	Pred.	Coef.	z	P > |z|	Coef.	z	P > |z|
French code law					−	−3.436	−4.80	<0.01			
German code law					−	−6.647	−9.32	<0.01			
Nordic code law					+	1.864	2.18	0.02			
Concentration					−	0.541	0.23	0.82			
Intercept		−35.87	−3.92	<0.01		71.16	48.23	<0.01	−29.23	−2.89	<0.01
N		1,251				1,251			1,251		
Chi-squared		224				771			213		
R^2		0.13				0.38			0.14		

Hausman's [1978] test rejects exogeneity of disclosure quantity at the 5% level. See table 1 for explanations of variables. Nine industry indicator variables are included in all equations but not reported. Z-values are one-sided for variables with predicted sign, two-sided otherwise. The coefficients for the forecast accuracy equation have been multiplied by 100 and are thus expressed as percentages. For model 2, *only* the forecast accuracy equation is shown for brevity. In model 2, Analyst following and Choice are indicator variables that take the value 1 if above median, and 0 otherwise.

to the issuance of only parent company financials. Forecast accuracy is not a significant determinant of disclosure quantity. There is thus no evidence that managers consider the accuracy of analysts' forecasts when making disclosure decisions. Consistent with prior research, Nordic code law is associated with increased disclosure whereas French and German code law is associated with reduced financial disclosure (relative to common law countries).

For the tests of H3 and H4, in model 2 of table 5 I add interaction terms, Disclosures * Analyst Following and Enforcement * Choice, to the regression tests in tables 4 and 5.[35] OLS tests yield similar results as 3SLS, and for brevity I present results only with 3SLS. H3 predicts that annual report disclosures are relatively less important for explaining variations in forecast accuracy for firms with a large analyst following, where analyst following is used as a proxy for a firm's information environment. The interaction between disclosure and analyst following is negative as hypothesized, with a *p*-value of .02.[36] This result supports H3 and suggests that annual report disclosures are more important for firms followed by relatively few analysts. Furthermore, it is consistent with the notion that the information environment of firms that have a high analyst following are different from those of other firms. The result also complements Botosan's [1997] finding that annual report disclosure levels are only significantly (negatively) related to cost of equity capital for firms that attract a low analyst following.

H4 predicts that enforcement is relatively more important when firms operate in environments in which they can choose among a larger set of accounting methods. The interaction is positive, consistent with the contention that enforcement is particularly useful in explaining forecast accuracy when firms can choose among a larger set of accounting methods. This finding supports H4 and suggests that strong enforcement reduces managerial flexibility when managers can choose among a larger set of acceptable accounting methods. For example, strong enforcement could make managers adhere more closely to the consistency principle. This, in turn, reduces analysts' uncertainty about the basis on which earnings are computed. However, the estimated coefficient is only significant at the 7% level. I interpret this result as implying that there is some support (albeit not very strong) for the notion that enforcement of accounting standards may be especially relevant when there is "more to enforce."[37, 38]

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[35] In model 2, Analyst following and Choice are indicator variables that take the value 1 if above median, and 0 otherwise.

[36] Panel C of table 2 shows that analyst following varies by country. Consistent results obtain when analyst following is country-mean adjusted.

[37] In a previous version of this paper, I reported univariate tests of H3 and H4. The univariate tests support both the hypotheses at the 1% level.

[38] In his discussion of this paper, Pope asserts that the association between enforcement and accuracy is "largely due to the interaction between enforcement and choice." As can be seen from tables 4 and 5, however, enforcement is positive and significant both with and without choice included.

6.5 ADDITIONAL ROBUSTNESS AND SPECIFICATION TESTS

Earlier, I concluded that results are not affected by the choice of scaling factor for the dependent variable, the inclusion or exclusion of the country-level control variables, endogeneity of disclosures, or dependence among observations. In this section, I report results of additional robustness tests.

To assess the sensitivity of the results to the underlying functional form assumption made by OLS, I reestimate the models using rank regression techniques. Similarly, given that the dependent variable has a highly skewed distribution with analyst following truncated at 0, I reestimate using Tobit. The results using rank and Tobit regressions support the reported results (not tabulated). I also assess the robustness of the findings to the presence of outliers. Excluding observations for which the absolute value of studentized residuals exceeds three results in a significantly higher R^2 and yields stronger results than those reported in tables 4 and 5.

As noted earlier, forecast accuracy is computed as the simple average of the measure based on forecasts of next year's earnings issued 4 to 12 months following the prior fiscal year-end. I test whether the choice of this forecast horizon affects the results by performing the tests again using forecasts issued in months 7 to 12 and month 12 only. I also perform the tests again using forecasts issued one or two months following the release of the annual report, where the release date differs by country as described in section 4.3. The results are not materially affected by these specifications.[39]

Bushman and Smith [2001] discuss how the set of control variables can affect the results of cross-country regressions. Removing country-level controls one at a time or altogether (compare model 5 in table 4) from the regressions does not affect results for disclosures and enforcement.

In summary, tests indicate that the findings are not driven by endogeneity of disclosures, functional form assumptions, outliers, forecast horizon, scaling factor, dependence among observations, or the set of control variables included.

7. *Conclusions*

In this study I investigate the effects of variations in annual report disclosure quantity and enforcement of accounting standards on the accuracy of financial analysts' earnings forecasts. Controlling for firm- and country-level factors, I document that firm-level annual report disclosure level is positively associated with forecast accuracy, which suggests that firm-level disclosures provide useful information to analysts. Prior international evidence on the relation between disclosures and forecast accuracy is inconclusive. I also

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[39] As expected, the significance of the disclosure variable is reduced when only month 12 forecasts are considered (with a one-sided *p*-value of 0.04 compared with 0.02 for months 4–12). The reduction in significance is consistent with annual report information being relatively less important to analysts when the release of the next period's earnings is closer.

add to the existing literature by using a firm-level measure of disclosures in an across-country sample, and by testing whether the result holds after controlling for the potential simultaneity between firms' disclosure choices and forecast accuracy.

I use a multicountry sample to take advantage of differences in the reporting infrastructure that go well beyond within-country variations. In particular, although accounting measurement and recognition rules have been significantly harmonized over time, there is still considerable variation in the enforcement of accounting standards across jurisdictions internationally. This lack of comparability in enforcement is of concern to national and international accounting standard setters, regulators, auditors, and financial statement users. Notwithstanding this interest, there has been limited prior research on enforcement of accounting standards, particularly in an international setting.

My comprehensive proxy for enforcement, constructed from five underlying variables, is significantly and positively related to forecast accuracy. This is consistent with the argument that strong enforcement encourages (or forces) managers to follow the rules that are in place and thereby reduces analysts' accounting uncertainty. This, in turn, diminishes the task complexity of forecasting future earnings.

I further document that annual report disclosures are more positively related to forecast accuracy when a firm is followed by few analysts, consistent with my hypothesis that the annual report constitutes a relatively larger part of a firm's overall communication process when analyst following is low. I also find evidence consistent with the usefulness of enforcement being greater in environments in which firms are allowed to choose among a larger set of accounting methods.

The findings in this article are subject to certain limitations. A potential disadvantage of using an international sample is that test results are more likely to be affected by omitted correlated variables. This study, however, includes controls for a number of firm- and country-level variables, and the results are not sensitive to the set of control variables included. Also, the potential to test for causality rather than mere associations is limited. Nevertheless, according to Levine and Zervos [1993] cross-country studies can be "very useful" as long as results are interpreted as suggestive of the hypothesized relations. Bushman and Smith [2001, p. 299] state that "as long as researchers interpret the results of cross-country studies with their 'eyes wide open,' there is much to learn from this type of inquiry." Finally, the sample period of the first half of the 1990s might not be representative of today's environment, although efforts to improve enforcement internationally have mostly been a recent phenomenon.

In related research, I investigate relations between specific elements of annual report disclosures and analysts' earnings forecasts (and analyst coverage). Future research can address other implications of variations in enforcement. For example, researchers can investigate the effects of differential enforcement (broadly defined) on earnings management, value relevance

of accounting data, or corporate governance issues. Such studies have the potential to be relevant to academics and practitioners alike.

APPENDIX: CIFAR DISCLOSURE SCORES AND VALIDITY TESTS

CIFAR Disclosure Scores[40]

CIFAR conducted evaluations of corporate annual report disclosures in the first half of the 1990s. Firms from 42 countries are included in their 1993 and 1995 evaluations, covering fiscal years 1991 and 1993, respectively. CIFAR studied annual reports of about 1,000 industrial companies for both years, for a total of 1,992 observations.[41] Company selection was based on sales and assets within the country. Countrywide proportions were based on quantitative factors such as market capitalization and gross national product and on factors such as growth patterns and the importance and relative position of a country in the global economic scenario. The companies selected represent a cross section of various industry groups. According to CIFAR, most of the "leading" industrial companies from each country are included.

Eighty-five annual report variables were used to construct the overall annual report score.[42] Data for all of the variables were extracted directly from annual reports. CIFAR's annual report variables are divided into seven broad groups: general information, income statement, balance sheet, funds/cash flow statement, accounting policies, stockholders' information, and supplementary information (see the following discussion). Within each group, the percentage availability of the variable in the annual report of the company was computed. If a particular company did not disclose data, it was given 0 points for a given variable. If the disclosure of a particular item was not applicable (e.g., disclosing exports is not required if there are no exports), CIFAR reduced the denominator for percentage purposes by 1. Similarly, for companies with no share capital, such as government-owned companies or mutually held companies, stockholders' information was not considered for ranking and analysis. Thus, a given company was *not penalized for not disclosing nonapplicable items.*

Not all seven disclosure subgroups or detailed disclosure items are likely to be equally important to analysts in forecasting earnings.[43] For example, it is plausible that analysts care less about the comprehensiveness of the

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[40] Source: CIFAR [1993, 1995], particularly CIFAR [1995, pp. 357–60].

[41] Specifically, in the CIFAR 1993 and 1995 editions, 986 and 1,006 firms were included, respectively, and 558 firms were included in both years, for a total of 1,992 firm-years (1,434 firms).

[42] For fiscal year 1991, the index was based on 90 annual report variables.

[43] Hope [2003b] explores the CIFAR subgroups whether the subgroups of CIFAR disclosures are equally important to analysts (as reflected in analyst following).

List of CIFAR Annual Report Variables

A: General information
Address/Telephone/Fax/Telex
Product Segment
Geographic Segment
Management Information
Subsidiaries Information
Future Plans/Chairman or CEO's Statement
Number of Employees
Fiscal Year-End

B: Income statement
Consolidated Income Statement
Cost of Goods Sold
Complete Income Statement
Sales
Selling, General and Administrative Expenses
Operating Income
Foreign Exchange Gains/Losses
Extraordinary Gains/Losses
Income Tax Expense
Minority Interest
Net Income Reported

C: Balance sheet
Complete Balance Sheet
Current Assets Separated from Fixed Assets
Current Liability Separated from LT Liability
Owners' Equity Separated from Liability
Separation of Non-Equity Reserves and
Retained Earnings
Cash and Cash Equivalents
Accounts Receivable
Inventories
Current Assets
Fixed Assets on Asset Side
Goodwill and Other Intangibles
Total Assets Can Be Derived
Shareholders' Equity Changes
Appropriation of Retained Earnings

D: Funds flow/cash flow
Funds Flow Statement
Complete Funds Flow Statement
Funds from Operations
Funds Definition
Cash Flow Statement

E: Accounting policies
Accounting Standards
Financial Statements Cost Basis
50% Long-Term Investments
Starting Point for Funds Statement
Research & Development Costs
Pension Costs
Reasons for Extraordinary Items
Inventory Costing Method
20% Long-Term Investments
21–50% Long-Term Investments
Acquisition Method
Accounting for Goodwill
Deferred Taxes
Outside Manager of Pension Funds
Long-Term Financial Leases
Foreign Currency Translation Method
Foreign Currency Translation Gains/Losses
Discretionary Reserves
Minority Interest
Contingent Liabilities

F: Stockholders' information
Dividends per Share
Earnings per Share
Number of Shares Outstanding
Multiple Shares
Par Value
Total Dividends
Stock Split/Dividend/Rights Issues
Stock Price
Stock Exchange Listing
Volume Traded
Diluted Earnings Per Share
Quarterly/Interim Dividends
Changes in Capital
Different Div. for Multiple Classes of Shares
EPS for Multiple Classes of Shares
Significant Shareholders
Composition of Shareholdings

G: Supplementary information
Earnings per Share Numerator
Earnings per Share Denominator
Notes to Accounts
Disclosure of Subsequent Events
Remuneration of Directors and Officers
Research & Development Costs
Capital Expenditure
List of Board Members and Their Affiliations
Exports; Financial Summary

income statement than extensive note disclosures.[44] Similarly, detailed items such as address or fiscal year-end are likely not as important as segment information or MD&A (all in General information). Including these potentially less relevant disclosures reduces the power of the tests reported in the article.

Quality and Reliability of CIFAR Data

Cooke and Wallace [1989] discuss the challenges in measuring financial disclosure. According to these authors, the quality of indexes depends on their reliability (whether the results can be replicated by other researchers) and validity (whether the index scores have any meaning as a measure of information disclosure). Healy and Palepu [2001] argue that although "self-constructed" measures of disclosures such as CIFAR's increase the confidence that the measure truly captures what is intended, there is necessarily judgment involved, and hence, findings may be difficult to replicate. It is thus important to test the quality and reliability of the CIFAR disclosure data used in this study.

Several studies use CIFAR data and several others rely on CIFAR's descriptions of accounting practices in various countries (e.g., Blaine [1994], Salter and Niswander [1995]). Cooke and Wallace [1989] audit the CIFAR database and conclude that no biases or errors were present in the data. Recently, the CIFAR index is used extensively in the finance and economics literature (e.g., Rajan and Zingales [1998], Carlin and Mayer [Forthcoming], La Porta et al. [1997]). Bushman and Smith [2001, p. 312] describe the CIFAR index as an "obvious candidate for the quality of the financial accounting regime." According to Salter [1998], the strengths of the CIFAR data are (1) it is based on actual annual reports, (2) the data have been audited by external sources, (3) the information is clearly provided, and (4) the data are available for three periods (1991, 1993, and 1995), although firm-level data are only included in the two most recent reports.[45] In addition to relying on these sources, I have attempted to verify further the validity of the disclosure scores.

I conduct extensive validity tests of the CIFAR data (see Hope [2001]). For example, I compare rankings by country with country-specific sources. For the United States, I compare the overall CIFAR scores against Botosan's [1997] annual report scores. Our samples contain only 23 firms in common, and Botosan's sample is from a slightly earlier period. The correlation between Botosan's scores and CIFAR's supplementary information index is

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[44] Consistent with this contention, income statement disclosures have the lowest correlation with forecast accuracy of the seven CIFAR groups. Results are stronger than those reported when the disclosure metric excludes income statement disclosure.

[45] CD-ROM PROFESSIONAL [1992] has the following comment on the quality of data provided by CIFAR: "The quality and care given to the data is of a high standard."

0.45 (with a *p*-value of .03).[46] For 21 Swiss firms, the correlation between CIFAR's total disclosure scores and the annual report ratings by the Swiss Financial Analyst Federation for the same sample period (Caramanolis-Cotelli et al. [1999]) is 0.65 (with a *p*-value of .001). As further anecdotal evidence based on the Norwegian firms in the sample, all of the 1990–1995 winners of the Best Annual Report (*Farmandprisen*) are above the mean and median for CIFAR's total annual report disclosure scores.[47]

I also conduct validity tests of subcomponents of the CIFAR scores. Frost and Ramin [1997] investigate disclosures of accounting policies in five countries: France, Germany, Japan, United Kingdom, and United States. The rankings of the five countries by CIFAR and Frost and Ramin are identical with one exception. In addition, I obtain 21 annual reports of Norwegian firms from the Norwegian Corporate Registry and compare my scoring of accounting policy disclosures against CIFAR's. For most of the companies the difference in assigned score is small. Although my median and mean scores are higher than CIFAR's, the differences are not significant. The correlation between the two sets of scores is 0.82 (significant at less than the 1% level).

Although CIFAR employed analysts from several countries, they would arguably be better able to consistently compare disclosure levels *within* a country than across countries. Because of this possibility, in an earlier version of this article I used disclosure scores from which country means had been subtracted. Results similar to those reported obtain with this alternative specification. I conclude from the foregoing tests that the quality and reliability of the CIFAR data are satisfactory.

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[46] Of the various categories of CIFAR disclosure scores, the supplementary information index (the average of general information, accounting policies, stockholders' information, and supplementary information) corresponds most closely to Botosan's index. The correlation between CIFAR total scores and Botosan's scores is positive but not significant at conventional levels (correlation of 0.26, *p*-value of 0.23).

[47] In addition, Frost, Gordon, and Hayes [2002] report that their country-level disclosure scores from 1998 (based on 12 measures) are significantly and positively correlated (0.32) with CIFAR country-level scores from 1993 (i.e., from CIFAR [1995]).

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