

Investor Protection and Analysts' Cash Flow Forecasts Around the World*

Mark L. DeFond and Mingyi Hung

Leventhal School of Accounting
Marshall School of Business
University of Southern California
Los Angeles, CA 90089-1421

November 30, 2003

Acknowledgments: We thank Steve Goldberg, Dave Guenther, John Hand, Mark Lang, Chul Park, Steve Rock, Bob Trezevant, Sunny Yang, and participants at University of Arizona, University of Southern California, University of Colorado, University of North Carolina and the 2003 American Accounting Association annual meetings for their helpful and constructive comments. We also gratefully acknowledge the contribution of *I/B/E/S* International Inc. for providing earnings and cash flows forecast data from their Institutional Brokers Estimate System, and in particular to Steven Sommers of *I/B/E/S* for his help. This data has been provided as part of a broad academic program to encourage earnings expectations research. In addition, the paper greatly benefited from the input we received during informal conversations and correspondence with several analysts, especially Laurence Madsen of Warburg Dillon Read and Fadi Chamoon of Bunting Warburg.

*Previous versions of this paper were titled "International Institutional Factors and Analysts' Cash Flow Forecasts."

Investor Protection and Analysts' Cash Flow Forecasts Around the World

ABSTRACT

Consistent with our predictions, we find that analysts are more likely to provide cash flow forecasts in countries with weak *investor protection* institutions. This finding is consistent with our hypothesis that market participants demand (and analysts supply) cash flow information when weak investor protection results in earnings that are less likely to reflect underlying economic performance. We also find that cash flow forecasts are more likely when (1) more extensive *accounting disclosure* reduces analysts' costs of forecasting cash flows; (2) more *foreign investment* increases the demand for information to help foreign investors interpret local accounting standards, and (3) lower *audit quality* results in earnings that are more likely to be misstated.

In addition to several robustness tests, we also repeat our hypothesis test after replacing the investor protection variables with more direct proxies for the ability of earnings to capture firms' underlying economic performance. Consistent with our hypothesis, we find that analysts are more likely to forecast cash flows in countries where earnings management is more pervasive, and where earnings are less value relevant.

Overall, our results suggest that information intermediaries respond to market-based incentives to help investors attenuate the adverse implications of country-level institutional factors on earnings' usefulness. These findings contribute to the literature by shedding light on the institutional determinants of analysts' research activities, and on the nature of the financial information they generate.

Investor Protection and Analysts' Cash Flow Forecasts Around the World

1. Introduction

Recent research finds that country-level institutional factors are associated with the usefulness of accrual-based accounting information.¹ A primary implication of this research is that poor investor protection laws and weak law enforcement result in environments where earnings are less likely to capture underlying economic events. While this research suggests that weak investor protection institutions limit earnings' usefulness, it does not address how information markets respond to these limitations. We conjecture that investors are more likely to demand cash flow information in environments where earnings are less likely to capture underlying economic events, because cash flows are useful in supplementing and interpreting the information in reported earnings, and thus are likely to help attenuate the adverse effects of weak investor protection on earnings' usefulness (DeFond and Hung [2003a]).² We expect analysts to respond to this demand by providing investors with additional cash flow information because analysts are information intermediaries with incentives to meet investors' information demands (Schipper [1991], Bushman, Piotroski and Smith [2003], Lang, Lins and Miller [2003]). An important way in which analysts provide investors with information is through their forecasts. Therefore, the purpose of our investigation is to test the association between analysts' propensity to forecast cash flows and investor protection institutions.

We hypothesize that analysts are more likely to issue cash flow forecasts in countries with weak investor protection institutions because earnings are less likely to reflect underlying economic performance in these countries. We also expect the production of cash flow forecasts to

¹ For example, see Alford, Jones, Leftwich and Zmijewski [1993], Ali and Hwang [2000], Ball, Kothari and Robin [2000], Guenther and Young [2000], Hung [2000], Ball, Robin and Wu [2000, 2001], Bartov, Goldberg and Kim [2001], Leuz, Nanda and Wysocki [2003].

² Additional research supporting cash flows' usefulness includes Rayburn [1986], Bowen, Burgstahler and Daley [1987], Wilson [1987], Barth, Cram and Nelson [2001].

be a function of other institutional factors that impact the supply of, and demand for, analysts' services. Specifically we also predict that: (1) more extensive *accounting disclosure* increases the supply of cash flow forecasts by reducing analysts' costs of forecasting cash flows, (2) more *foreign investment* increases the demand for cash flow forecasts to help foreign investors interpret local accounting standards, and (3) lower *audit quality* increases the demand for cash flow forecasts because earnings are more likely to be misstated. Following prior research, we use the anti-director rights and law enforcement measures in La Porta, Lopez-de-Silanes, Shleifer and Vishny [1998] to capture *investor protection*. We use the CIFAR disclosure index to measure the extent of *accounting disclosure* in each country (Bushman et al. [2003], Leuz et al. [2003]); the equity investment of foreign investors scaled by gross domestic product to capture the degree of *foreign investment* (Bushman et al. [2003]); and the market share of Big 5 auditors to surrogate for *audit quality* (Choi and Wong [2002], Francis, Khurana and Pereira [2003]).

We test our hypothesis using a logistic regression with a binary dependent variable that allows us to include several firm-level control variables. Specifically, our regression includes the following control variables: (1) the number of analysts following each firm, because greater analyst following might mechanically lead to a greater probability that analysts will provide more information for a given firm; (2) size of a company since analysts may provide more extensive information for larger firms; (3) a dummy variable indicating whether the company is among the largest 20 companies in the economy, because analysts may provide more extensive information for the most important firms in the economy; (4) a dummy variable capturing whether the firm is cross-listed on a major U.S. stock exchange, because the extensive listing requirements in the U.S. may impact investor demand for additional value-relevant information (although it is debatable whether it will increase or decrease the demand for cash flow forecasts) and (5) industry dummy

variables, because DeFond and Hung [2003a] find that the demand for cash flow forecasts varies systematically across industries.

We test our predictions on a sample of 59,427 firms from 36 countries over the period 1994 through 1999, using information in the *I/B/E/S Detail History* U.S. and International databases. Since analysts forecast earnings for all firms in the I/B/E/S database, we are reasonably assured that investors demand value-relevant information about our sample firms. That is, we only expect analysts to invest in the costly generation of earnings forecasts when there is investor demand for the information. This is an important consideration because our predictions implicitly assume a setting in which there is investor demand for value-relevant information. Descriptively, we find that the proportion of firms for which analysts forecast both *earnings* and *cash flows* varies widely. For example, while analysts forecast cash flows for an average of 61% of the companies in each country worldwide, they forecast cash flows for 86% of the companies in Portugal, and 8% of the companies in the U.S. This is consistent with a wide variation in investor demand for cash flow information across countries.

Our results find support for our hypothesis and our predictions regarding accounting disclosure, foreign investment, and audit quality. In addition, we perform tests designed to assess the reasonableness of an important assumption underlying our analysis: that our investor protection variables are good surrogates for the ability of accounting earnings to capture firms' underlying economic performance. These tests consist of rerunning our logistic regression after replacing the investor protection variables with two measures of the propensity of earnings to capture underlying economic performance: the measure of *earnings management* used in Leuz et al. [2003] and the measure of *earnings' value relevance* used in Ali and Hwang [2000]. Consistent with our

prediction, we find that analysts are more likely to forecast cash flows in countries where earnings management is more pervasive, and where earnings are less value relevant.

Also, in a supplementary analysis using a greatly reduced sample size, we find that our result is robust to including additional variables controlling for the accounting, operating and financing characteristics found to be associated with the issuance of cash flow forecasts in the U.S. capital markets in DeFond and Hung [2003a]. Specifically, this additional analysis includes firm-level controls for the magnitude of accounting accruals, earnings volatility, capital intensity and financial health (measured as the existence of losses and leverage).³

Sensitivity tests also find that our results are robust to: testing for the influence of multicollinearity, controlling for the level of stock market development, using an alternative measure of foreign investment, controlling for endogeneity between foreign investment and cash flow forecasts, controlling for potential time-series correlation among our regression error terms, and sequentially excluding Japan and the U.S. from our sample. In addition, in an attempt to corroborate our findings, we compare the returns-earnings associations and the earnings response coefficients across the sample firms with and without cash flow forecasts. We find that: (1) the association from regressing 15-month cumulative abnormal stock returns on annual earnings changes is lower among firms with cash flow forecasts compared to those without; and (2) the earnings response coefficient on changes in earnings is significantly lower among firms with cash flow forecasts compared to those without. These findings are consistent with earnings being less value relevant and less informative, respectively, among firms with cash flow forecasts, and corroborate the finding in our hypothesis tests.

³ This additional test also includes the country-level measure of accruals from Hung [2000]. We are unable to control for “accounting choice heterogeneity,” a factor found significant in DeFond and Hung [2003a], due to limited data on international accounting choices across our 36 countries. In addition, due to data constraints we use losses and leverage to capture financial distress rather multivariate measures such as Altman’s Z-score.

Our study contributes to the literature in several ways. First, we complement the research that investigates the association between country-level institutional factors and the properties of accounting information. While Ball et al. [2000] document that institutional factors limit accrual-based earnings' usefulness in valuing securities, we address how information intermediaries respond to these limitations. Our results suggest that analysts respond by supplying cash flow information that is likely to help attenuate these limitations. Second, our study adds to the large body of research that examines the behavior of U.S. and international financial analysts.⁴ Consistent with Lang et al. [2003], our results suggest that an important role of analysts is to provide information to investors when the information is most likely to be useful. In addition, our results shed light on the institutional determinants of analysts' research activities, and on the nature of the financial information they generate (Bushman and Smith [2001]).

Third, we extend the literature that finds countries' institutional factors dominate formal accounting regimes in determining the nature of reported accounting information (e.g., Ball et al. [2000] and [2001]). Consistent with this research we find evidence that country-level institutional factors also influence the nature of the information generated by financial intermediaries. Finally, we contribute to the substantial body of research that investigates cash flows' usefulness to investors. In particular, we add to the recent research that finds that firm characteristics help explain analysts' propensity to forecast cash flows in the U.S. capital markets (DeFond and Hung [2003a]). While focusing exclusively on the U.S. capital markets holds constant the effects of countries' institutional factors, we extend this research by allowing these factors to vary.

Documenting the association between country-level institutional factors and the characteristics of

⁴ For example, see Brown and Rozeff [1978], Fried and Givoly [1982], O'Brien [1988], Schipper [1991], Basu, Hwang and Jan [1998], Chang, Khanna and Palepu [2000], Kothari [2001], Lang et al. [2003].

information markets is important because of the growing interest in internationalizing worldwide capital markets (Ball et al. [2000]).

The remainder of the paper is structured as follows. Section 2 develops our hypothesis and section 3 presents the methodology for testing our hypothesis. Section 4 describes the sample and presents the empirical results, section 5 presents additional evidence on long-window returns-earnings relations, and section 6 describes the results of several robustness tests. Section 7 summarizes our investigation and discusses limitations to interpreting our findings.

2. Hypothesis Development

Recent studies find that legal factors are useful in explaining cross-country variation in corporate ownership structure, the development of capital markets, dividend policies, reliance on external financing, and the quality of accounting information. These studies suggest that the legal protection of investors' rights is the crucial element in understanding the pattern of corporate finance and the role of accounting information worldwide (La Porta et al. [2000], Bushman and Smith [2001]). A growing sub-set of this research finds evidence that differences in shareholder protection laws and enforcement help explain differences in earnings' usefulness across countries. For example, Ball et al. [2000] show that institutional factors related to countries' legal systems affect earnings' ability to capture economic income over time. More recently, Leuz et al. [2003] suggest that earnings in countries with weaker investor protection are subject to greater managerial manipulation to mask true firm performance.

We expect weak investor protection to reduce earnings' usefulness for two related reasons. First, shareholders in countries with weak protection of shareholders' rights are less able to discipline inefficient and opportunistic managers. Consequently, shareholders' diminished abilities to hold managers accountable reduce managers' incentives to supply investors with

earnings that reflect underlying economic events. This is consistent with research suggesting that shareholders are less willing to invest in countries with weaker investor protection; that such countries tend to have smaller and less liquid capital markets; and that managers are more likely to manipulate earnings in countries with poorer investor protection (La Porta et al. [1997], Guenther and Young [2000], Hung [2000], Leuz et al. [2003]).

Second, countries with weak investor protection tend to have code law legal origins (Chang et al. [2000], Hung [2000], La Porta et al. [2000]). Ball et al. [2000] document that earnings in code law countries are less timely in incorporating economic income when compared to common law countries. This is consistent with code law countries providing institutional settings where earnings play a less important role in valuing securities, and where managers face fewer incentives to report earnings that faithfully portray economic performance.

When weak investor protection institutions adversely impact earnings' usefulness we expect market participants to demand additional information to help assess firm value. We argue that cash flows are a valuation measure that is likely to satisfy this demand. While prior research generally finds that earnings are superior to cash flows in explaining stock returns in the U.S. and internationally, evidence also suggests that cash flows are *incrementally* useful to earnings in valuing securities (e.g., Bowen et al. [1987]). In particular, DeFond and Hung [2003a] use U.S. data and find evidence suggesting that cash flows are useful in helping investors *interpret* earnings. Their findings are consistent with investors using cash flows to ascertain earnings quality because cash flows are less subjective than accrual-based earnings (Penman [2001, p. 611], Wild, Bernstein and Subramanyam [2001, p. 532]).⁵ One implication of this research is that market participants are

⁵ Although cash flows are less subject to accounting distortions than earnings, we note that they can still be influenced by management discretion (Mulford and Comiskey [2002]).

more likely to demand cash flow information when valuing securities in countries where institutional factors limit earnings' usefulness.⁶

Prior research finds that sell-side analysts are important information intermediaries with incentives to provide market participants with information useful in valuing securities (Schipper [1991], Harris, Lang and Moller [1994], Lang et al. [2003]). This suggests that analysts, subject to the other supply and demand factors that are likely to influence their information production decisions, are likely to provide value-relevant information when it is demanded by market participants. Thus, *ceteris paribus*, we expect that analysts are more likely to provide investors with cash flow forecasts in countries where investor protection is relatively weaker.⁷ As in DeFond and Hung [2003b] and Leuz et al. [2003], we capture investor protection using the anti-director rights and law enforcement measures used in La Porta et al. [1998]. Thus, we hypothesize the following (in alternative form):

Hypothesis: Ceteris paribus, analysts are more likely to make cash flow forecasts for companies in countries with weaker anti-director rights and poorer law enforcement institutions.

While we expect poor investor protection to create a setting that stimulates investor demand for cash flow forecasts, it also coincides with economies that have less developed equity markets (La Porta et al. [1997]), and therefore fewer investors that demand information useful in valuing securities. However, we note that our sample firms are covered in I/B/E/S and followed by analysts. Thus, we are assured that there is investor demand for value-relevant information about our sample firms, because it is unlikely that analysts would engage in the costly information

⁶ This inference is consistent with a recent Special Report in *The Economist* that comments on problems of comparing accounting information across countries (The Economist [2002]):

"Standard-setters admit that no country has adequate rules on the recognition of revenues. A solution in the meantime may be to look at cash, which is far harder to disguise or invent. Comroad duped its auditor about its revenues, but it could not conceal the fact that its cash flow was negative."

⁷ This prediction is consistent with our discussions with a sell-side analyst specializing in Latin American companies. This analyst indicated that there is a lack of trust in the reported earnings of Latin American companies and thus a greater demand for additional analyses, including providing cash flow information.

acquisition and computational effort necessary to generate earnings forecasts in the absence of investor demand. Thus, while poor investor protection is associated with less well developed capital markets, it is reasonable to assume that our sample consists of firms for which investors demand value-relevant information. To the extent that it does not, it biases against finding support for our predictions.

2.1 OTHER INSTITUTIONAL FACTORS AFFECTING THE SUPPLY AND DEMAND FOR CASH FLOW FORECASTS

2.1.1 *Disclosure.* Firm disclosure levels are likely to impact analysts' propensity to forecast cash flow information because cash flow forecasting likely requires a relatively significant amount of firm disclosure. Penman [2001, p. 309] indicates that cash flow forecasts are a non-trivial by-product of earnings forecasts, and that analysts typically predict earnings first and then perform additional analyses to convert earnings forecasts to cash flow forecasts. The effects of varying disclosure levels on analysts' propensity to make cash flow forecasts, however, are not immediately obvious.

The arguments in Lang and Lundholm [1996] suggest that the level of financial disclosure by firms potentially affects both the *supply* of cash flow forecasts provided by analysts to investors, and the *demand* for cash flow forecasts by investors.⁸ Higher levels of disclosure by managers reduce analysts' costs of acquiring information, thereby reducing the costs of providing cash flow forecasts.⁹ When the costs of providing the forecasts fall, the supply curve shifts to the right, thereby increasing the supply of cash flow forecasts. The effects of disclosure on the *demand* for cash flow forecasts, however, depend upon the role that analysts play in the capital markets. If

⁸ While Lang and Lundholm [1996] analyze analysts' behavior in terms of analysts following and forecast accuracy, we adapt their arguments to analyze the supply of analyst services on making cash flows forecasts.

⁹ This is consistent with our conversation with an analyst in Bunting Warburg, who indicates that it is more difficult to compute cash flow forecasts for companies in countries with inadequate disclosure.

analysts are *information intermediaries*, their role is to take information provided by managers, process it, and then disseminate it to market participants. Under this assumption, increased firm disclosure increases the value of the forecasts (e.g. their accuracy is expected to increase). When the forecasts are more highly valued, the demand curve shifts to the right, thereby increasing the demand for cash flow forecasts. On the other hand, if analysts are viewed as *information providers*, who compete with the information provided by managers, then increased firm disclosure is a substitute for the analysts' services. Under this assumption, increased disclosure shifts the demand curve to the left, thereby reducing the demand for cash flow forecasts.

A large body of prior research finds that analyst following increases with levels of firm disclosure, consistent with analysts playing the role of *information intermediaries* (Lang and Lundholm [1996], Healy, Hutton and Palepu [1999], Bushman et al. [2003], Lang et al. [2003]). This suggests that increased firm disclosure is likely to increase both the supply of analysts' cash flow forecasts and the demand for those forecasts. Therefore, we expect that greater firm disclosure increases the propensity for analysts to forecast cash flows, and include a variable in our analysis to control for the level of firm disclosure. Following prior studies such as Bushman et al. [2003] and Leuz et al. [2003] we capture the level of accounting disclosure in a country using the index developed by the *Center for International Financial Analysis and Research* (CIFAR [1995]). The index represents the average percentage of 85 items included in the annual reports of a sample of domestic companies for each country, where higher scores equal greater disclosure. We predict a positive association between analyst's propensity to forecast cash flows and the CIFAR index.

2.1.2 *Foreign investment*. Another factor likely to impact the demand for cash flow forecasts is the extent of foreign investment in a country. Prior studies suggest that foreign investors are likely to experience greater information asymmetry than domestic investors and that this information

asymmetry is an important determinant of U.S. investors' bias against foreign stocks (Ahearne, Grier and Warnock [2000], Chang et al. [2000], Guenther and Young [2003]). One explanation for this information asymmetry is lack of familiarity with local accounting standards, consistent with reported earnings being less useful to foreign investors.¹⁰

One way for foreign investors to overcome this information disadvantage is to use cash flow information to help interpret foreign GAAP-based earnings because cash flows are not subject to different accounting treatments and accrual estimates.¹¹ Thus, in countries with more foreign investment, we expect that analysts are more likely to provide cash flow forecasts in response to the greater demand for cash flow information. This is consistent with Chang et al. [2000], who find evidence that the extent of foreign investment in an economy increases the level of analysts' services, and argue that this is because information asymmetry among foreign investors stimulates demand for analysts' research activities.

Thus, we include a variable in our analysis that controls for the extent of foreign investment. We capture the extent of foreign investment as in Bushman et al. [2003], using a measure of foreign equity investment compiled by World Bank.¹² Foreign investment is measured as international equity investments made to establish a lasting management interest (10% or more of

¹⁰ For example, Patrick O'Donnell, chief of global equity research at Putman Investments, states that the most difficult task in cross-border investment is to achieve "true comparability" between, for example, U.S. and Argentinean oil companies. Although Putman prides itself on having analysts who understand different accounting methods, O'Donnell notes "there will always be quirks and twists." (Meisler [1997]).

¹¹ For example, the global telecommunication team in Morgan Stanley Dean Witter states: "Wireless companies are most commonly valued on a discounted cash flow basis... Due to the different accounting treatment for goodwill,...amortization expense among operators can vary significantly. For this reason, it is difficult to compare wireless operators on an operating income basis" (Morgan Stanley Dean Witter [1999]).

¹² We note that the information asymmetry problem varies with the source of foreign investment. For example, if the foreign investment is mostly from countries with similar accounting standards and institutional background, the information asymmetry among foreign investors should not be severe. Since we are unable to find data on the sources of foreign investment across countries, we acknowledge that the foreign investment variable is measured with error. However, we do not expect the noise in this variable to bias towards supporting our hypothesis.

voting stock) in an enterprise in an economy other than that of the investor, scaled by GDP.¹³ We predict a positive association between analyst's propensity to forecast cash flows and our foreign investment measure.

2.1.3 *Audit quality.* "Audit quality" is also a factor likely to influence the demand for cash flow forecasts, where audit quality is defined as the joint probability that the auditor will detect and report breaches in the financial statements (Watts and Zimmerman [1983]). Earnings reported in countries with higher quality auditing are less likely to contain unintentional errors or reflect management opportunism. As Bushman and Smith [2001] observe, increased audit rigor is likely to enhance investors' reliance on reported accounting information. Thus, we expect market participants' demand for cash flow information in assessing earnings quality to decline in countries with better audit quality.

A surrogate often used to capture higher audit quality is whether the auditor is a member of the large international auditing firms, known as the Big 5 during the period we analyze (and formerly known as the Big 8 and Big 6 prior to mergers during the mid and early 1990's). A large body of research supports the contention that these large international auditors provide higher quality auditing services that lead to more credible financial reporting. For example, Palmrose [1988] finds a lower incidence of auditor litigation among Big 8 auditors compared to non-Big 8 auditors, and argues that this suggests Big 8 auditors are more likely to detect and report financial statement errors. Consistent with this finding, DeFond and Jiambalvo [1993] find that Big 8 auditors are more likely to challenge managers who make income-increasing accounting choices, and Becker,

¹³ Another measure of foreign equity investment is foreign equity portfolio investment. We do not use foreign equity portfolio investment because these data are available for only 15 of our 36 sample countries. Also, World Bank documents suggest that data on foreign equity portfolio investment often suffer from measurement errors and inconsistency because many developing economies' periodic reporting lacks clarity, adequate disaggregation, and comprehensiveness (World Bank [2001]).

DeFond, Jiambalvo and Subramanyam [1998] and Francis, Maydew and Sparks [1999] find evidence that Big 6 auditors allow less earnings management among their clients.

Higher audit quality among the large international auditing firms is also supported by numerous studies that examine audit pricing. For example, Francis and Simon [1987] find that Big 8 auditors are able to charge a premium for their services and conclude that this suggests that Big 8 auditors provide higher quality auditing. Similarly, international studies by Craswell, Francis and Taylor [1995], and DeFond, Francis and Wong [2000] find that the large international auditing firms in Australia and Hong Kong, respectively, also charge fee premiums consistent with these auditors providing higher audit quality.

Following prior research, we capture country-level audit quality as the market share of Big 5 auditors (Choi and Wong [2002], Francis et al. [2003]), where a smaller market-share by Big 5 auditors suggests the countries' earnings have relatively poorer credibility. We predict a negative association between analyst's propensity to forecast cash flows and the market share of Big 5 auditors.

3. Research Design

We test our hypothesis using a logistic regression with the dependent variable indicating whether the sample firm has a cash flow forecast. Descriptions of the formal models follow.

$$\begin{aligned}
 \text{Cash flow indicator} = & \beta_0 + \beta_1(\text{Antidirector rights}) + \beta_2(\text{Law enforcement institutions}) + \\
 & \beta_3(\text{Disclosure}) + \beta_4(\text{Foreign investment}) + \beta_5(\text{Audit quality}) + \\
 & \beta_6(\text{Number of analysts}) + \beta_7(\text{Firm size}) + \beta_8(\text{Largest 20}) + \\
 & \beta_9(\text{Cross-listed}) + \beta_n(\Sigma \text{Industry}) + \varepsilon
 \end{aligned} \tag{1}$$

Where:

Cash flow indicator = Dummy variable equal to one if the firm has both earnings and cash flow forecasts and 0 if the firm has only earnings forecasts.

Antidirector rights = The anti-director right index constructed by La Porta et al. [1998]. The index aggregates the following components of investor rights: (1) the ability to vote by mail,

(2) the ability to gain control of shares during the investors' meeting, (3) the possibility of cumulative voting for directors, (4) the ease of calling an extraordinary investors meeting, (5) the availability of mechanisms allowing minority investors to make legal claims against the directors, and (6) the presence of shareholders' preemptive rights that can be waived only by a shareholders' vote. The index ranges from 0 to 5, with higher scores for stronger shareholder rights.

Law enforcement institutions = An index based on the mean score of three legal enforcement variables reported in La Porta et al. [1998] and used in Leuz et al. [2003]. The three variables are (1) efficiency of the judicial system variable that assesses the efficiency and integrity of the legal environment, based on the average of 1980-1983 data from Business International Corp. (2) rule of law variable that assesses the rule and order tradition in a country, based on the average of 1982-1995 data from International Country Risk, and (3) corruption variable that assesses the corruption in government, based on the average of 1982-1995 data from International Country Risk.¹⁴ The index ranges from 0 to 10, with higher scores for a greater law enforcement.

Disclosure = An index developed for each country by the *Center for International Financial Analysis and Research* (CIFAR [1995]). The index represents the average percentage of 85 items included in the 1993 annual reports of a sample of domestic companies for each country, where higher scores equal greater disclosure.

Foreign investment = Investments made to establish a lasting management interest (10% or more of voting stock) in an enterprise in an economy other than that of the investor, in a company operating in the country in 1996, scaled by GDP. This variable is obtained from the World Bank World Development Indicators.¹⁵

Audit quality = Market share of Big-Five audit firms in each country from 1993 to 1998 (Choi and Wong [2002])

Number of analysts = Number of analysts issuing earnings forecasts for the firm in each year.

Firm size = The natural logarithm of the market value of equity in millions of U.S. dollar at the beginning of year, where market value of equity equals stock price multiplied by number of shares outstanding according to the I/B/E/S database.

Largest 20 = Dummy variable equal to one if the firm is one of the largest 20 firms in its country, where size is measured by market value at the beginning of year according to the I/B/E/S database.

Cross-listed = Dummy variable equal to one if the securities of the foreign firm are traded on the NYSE, AMEX or NASDAQ and equal to zero otherwise. The data source is the 2002 Depository Receipts Directory from Bank of New York.

Dindustry = Dummy variables indicating a firm's industry membership based on industry group classifications from I/B/E/S sector data. I/B/E/S classifies firms into eleven sectors: Finance,

¹⁴ We note that the efficiency of the judicial system component of the law enforcement institutions variable is measured much earlier than our investigation period. Thus, we rerun our analysis after using the rule of law component of this variable (because it is measured over a period ending in 1995) as a proxy for the law enforcement institutions (as in La Porta et al. [1997]). The results find that the signs and significance levels of the average coefficients of all our country-level variables are consistent with the results currently reported in Table 3.

¹⁵ The World Bank World Development Indicators do not disclose foreign investment for Hong Kong separately. Since most foreign investment in China is likely to go through Hong Kong, we use foreign investment for China to proxy for the foreign investment in Hong Kong. In addition, we repeat our analyses after excluding Hong Kong and find that the signs and significance levels of the all hypothesized variables are consistent with the results reported in our primary analysis (Table 3).

Health care, Consumer non-durables, Consumer services, Consumer durables, Energy, Transportation, Technology, Basic industries, Capital goods and Public utilities.

Our hypothesis predicts that coefficients β_1 and β_2 are negative. We also predict that coefficients β_3 and β_4 are positive, and that coefficient β_5 is negative. To control for the dependence in the error terms in pooled time-series cross-sectional regressions, we run six annual regressions and analyze the significance of the means of the coefficients from the six regressions (Fama and MacBeth [1973]). Although we measure our firm-level control variables in each of the six years during the investigation period, we acknowledge that we are not able to do so for our country-level independent variables due to data limitations.¹⁶ We note that this is a common limitation in cross-country studies (e.g., Ali and Hwang [2000], Hung [2000], Guenther and Young [2003]) and that changes in country-level institutions is a slow process (North [1990]). To the extent there is change in our independent variables over our investigation period, we introduce noise into our measures. However, we do not expect this noise to bias towards supporting our hypothesis.

We include several control variables in our second model. We include the *number of analysts* following each firm because greater analyst activity may result in a more competitive environment that provides analysts with incentives to generate additional information, such as cash flow forecasts. We include firm size because larger firms may gain more attention from analysts and this may increase the probability the analysts will issue cash flow forecasts for the firms. We also have a dummy variable capturing whether the firm is among the largest 20 in the economy because

¹⁶ Foreign investment is the only country-level variable with data available during each of our test years. Although the data in 1996 should be representative for the level of foreign investment during our investigation period 1993-1999, it is possible that foreign investment levels differ before and after the 1998 Asian financial crisis. Thus, we repeat our analysis after measuring foreign investment in each of the six years during our investigation period. We find that the signs and significance levels of the all country-level variables are consistent with the results reported in our primary analysis (Table 3).

in some countries we expect that only the “pillars of the economy” are followed by analysts, and that analysts may generate more information for such firms. We include a dummy variable indicating whether securities of the foreign firm are cross-listed on the NYSE, AMSE or NASDAQ stock exchanges in the U.S., although the predicted sign on this dummy is unclear. There may be less demand for cash flow information for cross-listed firms because the SEC requires reconciliation of local-GAAP to U.S. GAAP for these firms. However, there may be a greater demand for cash flow information for cross-listed firms because U.S. investors in these firms may be relatively more suspicious of foreign-based investments. Finally, we include a dummy variable for each firm’s industry membership because DeFond and Hung [2003a] find that cash flow forecasts for U.S. firms differ across industries.

4. *Empirical Results*

4.1 SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

Our initial sample consists of all U.S. and international firms with one-year ahead annual earnings forecasts in the *I/B/E/S Detail History Files, U.S. Edition* for U.S. and Canadian firms and *International Edition* for firms in other countries, from 1994 to 1999 with sufficient data compute the variables used in our analyses. Our discussions with *I/B/E/S* personnel indicate that the *I/B/E/S* database includes all cash flow forecasts submitted to *I/B/E/S* by their subscribing analysts. Since analysts forecast earnings for all firms in the *I/B/E/S* database, we are assured that there is investor demand for value-relevant information about our sample firms. To be included in the sample, *countries* must have the necessary data to compute the country-specific variables used to test our predictions, and *companies* must have the necessary data to compute the firm-level control variables.

Panel A of Table 1 discloses the number of firms with earnings forecasts and the number and proportion of firms with earnings forecasts that are accompanied by one-year ahead cash flow forecasts, for each of the 36 countries we analyze, ranked by the forecast proportion. This panel discloses a large variation across countries in the proportion of firms with cash flow forecasts. For example, while ten countries report proportions greater than 80%, eight countries report proportions less than 50%. This variation is consistent with differences in the country-specific factors that drive the demand for cash flow forecasts.

Panel B of Table 1 reports the total number of firms with earnings forecasts and both the number and proportion of firms with earnings forecasts that are accompanied by one-year ahead cash flow forecasts, classified by the industry categories reported in *I/B/E/S*. Consistent with DeFond and Hung [2003a], this analysis finds that cash flow forecasts are relatively more prevalent among firms in capital intensive industries, such as Energy, Basic industries, Transportation and Public utilities. Panel C of Table 1 reports the total number of firms with earnings forecasts and both the number and proportion of firms with earnings and cash flow forecasts during each of the six years we analyze. This panel shows that 26% of the firms with earnings forecasts in 1994 also have cash flow forecasts, while 39% of the firms with earnings forecasts in 1999 also have cash flow forecasts, with a relatively steady increasing trend in the interim.¹⁷ Panel D of Table 1 reports the average number of analysts per firm making earnings and cash flow forecasts during each of the six years we analyze. This panel shows that the average number of analysts making earnings forecasts per firm increases from 6.4 to 9.3 from 1994 to 1999, with the largest increase during 1995, and the increases since that time being relatively

¹⁷ While not reported in Table 1, only 4% of the *I/B/E/S* firms with earnings forecasts also had cash flow forecasts during 1993, the first year for which *I/B/E/S* began reporting cash flow forecasts. Because the sample size is small in 1993, we begin our analysis with 1994 data.

small. The number of analysts making cash flow forecasts per firm increases from 2.9 to 8.0 over this period, with relatively steady increases each year.

Panel A of Table 2 presents the average proportion of firms with cash flow forecasts for each of the countries we analyze, along with the values of the independent variables used in our logit regressions. The bottom three rows of the table present the mean, median and standard deviation for each of the variables presented. The table indicates that the mean and median proportion of cash flow forecasts across the six years we analyze for the 36 sample countries are 61% and 65%, respectively. Panel A also suggests that there is a reasonable amount of variation in the independent variables.

Panel B of Table 2 presents Pearson correlation coefficients for the associations among the proportion of cash flow forecasts and the country-level institutional variables. The first row of the table presents the correlations between the proportion of cash flow forecasts for each country, and each of our independent variables. The correlations in the first row are consistent with our prediction that analysts are more likely to forecast cash flows for firms in countries with weaker investor protection as captured by the anti-director rights measure, but they are not consistent with our other predictions. However, because correlation analysis does not control for all of the variables in the model, we rely on the multivariate analyses to test and draw conclusions regarding our predictions.

Panel B of Table 2 also reports that several correlations between our independent variables are relatively high. For example, the coefficients on the correlations between Disclosure, Law enforcement, and Audit quality range from 0.47 to 0.58. High collinearity among regressors in a logit model can inflate the standard errors of the estimated coefficients (Greene [1993]), and inflated standard errors potentially make it more difficult to achieve significance for the

coefficients. Since the collinearity among many of our regressors is reasonably high, we perform additional analyses (discussed in the robustness section) to assess the impact of multi-collinearity on our results.

Panel C of Table 2 presents descriptive statistics on each of our firm-level control variables. This panel indicates that the average number of analysts following is 8.6 per firm, with a standard deviation of 8.31, suggesting a fairly high average following, but a large variation across firms. Panel C also indicates that a very small proportion of firms are cross-listed on U.S. exchanges.

4.2 HYPOTHESIS TESTS

Table 3 reports the results of testing our hypothesis using a logistic regression model that measures the dependent variable as an indicator variable for each firm in our sample and includes several firm-level control variables. This table discloses the predicted sign of each coefficient, the average coefficients from estimating equation (1) over the six years of our analysis, the frequency with which each coefficient is positive, the average change in odds, and the two-tailed p-values for the significance of the mean coefficients using both a Z-statistic and t-statistic.¹⁸ The results indicate that the coefficients on both of our investor protection measures, as well as our measures of disclosure, foreign investment and audit quality are all significant in the predicted direction at $p \leq 1\%$ (two-tailed).¹⁹ Table 3 also indicates that the coefficients on two of the firm-level control variables, number of analysts and largest 20 firms, are significant in the predicted direction at $p < 1\%$ (two-tailed) and one, the cross-listed variable, is significant at $p < 10\%$ (two-tailed).²⁰

¹⁸ The Z-statistics equal the mean of the t-statistic divided by the standard error of the t-statistics from the six annual regressions (White [1984]). The t-statistics equal the mean of the coefficients divided by the standard error of the coefficients from the six annual regressions (Fama and MacBeth [1973], Bernard [1987]).

¹⁹ We note that because our significance levels are two-tailed and we have signed predictions for our test variables, our significance levels are conservatively stated.

²⁰ We note that the coefficient on firm size is not significant. This is possibly because the model also includes number of analysts, a variable highly correlated with firm size, as a control variable. We rerun our analysis after excluding the number of analysts from the regression and find that firm size becomes significantly positive at $p < 1\%$ (two-tailed), while the signs and significance levels of the average coefficients of all our country-level variables remain the same.

We note that the pseudo R-square for the model in Table 3 is 37%, suggesting that the model has a reasonable explanation power for analysts' propensity to forecast cash flows. As in DeFond and Hung [2003a], Table 3 also presents changes in odds to help interpret the economic importance of the variables in our logit model. The percentages in the column titled "Average change in odds (%)" estimate the change in the odds of a firm having cash flow forecasts in response to a one standard deviation increase in the corresponding regressor (Allison [1999]). The magnitudes of the changes in odds in Table 3 range from 10% to 165%. For example, Table 3 indicates that a one standard deviation increase in accounting disclosure increases the odds of a firm having cash flow forecasts by 111%. Thus, based on the magnitudes of the percentages in the "Average change in odds (%)" column, we conclude that our independent variables are economically significant in terms of their ability to explain the phenomenon we are examining.

Finally, based on the hypothesis test in Table 3, our findings are consistent with analysts forecasting cash flows for firms in countries with weaker investor protection, greater disclosure, more foreign investment and lower audit quality.

4.3 ADDITIONAL ANALYSES ON EARNINGS' PROPERTIES AND ANALYSTS' CASH FLOW FORECASTS

The results in Table 3 are consistent with our hypothesis that analysts forecast cash flows when earnings are less likely to reflect underlying economic performance due to weak investor protection. Thus, a critical underlying assumption in our analysis is that our investor protection variables are good surrogates for the ability of earnings to capture underlying economic performance. In an attempt to assess whether this is a reasonable assumption, we rerun the logistic regression analysis after replacing the investor protection variables with two measures of the propensity of earnings to capture underlying economic performance: the measure of *earnings management* used in Leuz et al [2003] and the measure of *earnings' value relevance* used in Ali

and Hwang [2000]. Consistent with our hypothesis, we expect analysts to be more likely to forecast cash flows when there is more pervasive earnings management and when there is less value relevant earnings. Our formal regression models and description of these tests follow.

$$\begin{aligned} \text{Cash flow indicator} = & \beta_0 + \beta_1(\text{Earnings management}) + \beta_2(\text{Disclosure}) + \beta_3(\text{Foreign investment}) + \\ & \beta_4(\text{Audit quality}) + \beta_5(\text{Number of analysts}) + \beta_6(\text{Firm size}) + \\ & \beta_7(\text{Largest 20}) + \beta_8(\text{Cross-listed}) + \beta_n(\Sigma\text{DIndustry}) + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Cash flow indicator} = & \gamma_0 + \gamma_1(\text{Value relevance of earnings}) + \gamma_2(\text{Disclosure}) + \gamma_3(\text{Foreign investment}) + \\ & \gamma_4(\text{Audit quality}) + \gamma_5(\text{Number of analysts}) + \gamma_6(\text{Firm size}) + \\ & \gamma_7(\text{Largest 20}) + \gamma_8(\text{Cross-listed}) + \gamma_n(\Sigma\text{DIndustry}) + \varepsilon \end{aligned} \quad (3)$$

Where:

Earnings management = The aggregate earnings management score from Leuz et al. [2003]. The score, based on 1990-1999 data, equals the average rank of two earnings smoothing measures and two earnings discretion measures. Argentina, Brazil, Chile, Columbia, Mexico, New Zealand and Turkey are excluded from this analysis due to missing data on the earnings management score.

Value relevance of earnings = The ranked value of earnings' value relevance, where earnings' value relevance is based on a portfolio-return approach and equals cumulative market-adjusted returns from an earnings-based hedge portfolio divided by that from a return-based hedge portfolio during the sample period. The cumulation period for the stock returns is 15 months ending three months after fiscal yearend. The earnings-based (return-based) hedge portfolio is constructed by taking long positions in firms with the highest 40% of changes in earnings and taking short positions in firms with the lowest 40% of change in earnings (market-adjusted returns) for the year (Ali and Hwang [2000], Hung [2000]).²¹

The other variables are measured as in equation 1 above.

We predict the coefficient on β_1 to be positive and the coefficient on γ_1 to be negative. Panel

A of Table 4 reports that the average coefficient on the earnings management variable is

significant at $p < 1\%$ (two-tailed) in the predicted direction and that the signs and significance levels

²¹ As discussed in Ali and Hwang [2000] and Hung [2000], the portfolio-returns approach we use to measure the value relevance of earnings is statistically superior to the regression-variations approach, primarily because it controls for the variation in market volatility across countries. As Francis and Schipper [1996] point out, inferences from the earnings model in volatile market periods can be misleading, especially regarding the belief that the higher the market volatility, the greater the downward bias in the value relevance of accounting measures from these tests. In addition, the portfolio-returns approach avoids the heteroscedasticity or specification problem in the earnings and book-value model (Kothari and Zimmerman [1995]).

of the average coefficients of all the other country-level variables are consistent with the results reported in Table 3. Panel B of Table 4 reports that the average coefficient on the earnings' value relevance variable is significant at $p < 1\%$ (two-tailed) in the predicted direction and the signs and significance levels of the average coefficients of all the other country-level variables are consistent with the results reported in Table 3 with the following exception: the disclosure variable becomes significant at 13% (two-tailed).

In summary, the analysis in Table 4 finds that analysts are more likely to make cash flow forecasts in countries where earnings management is more pervasive and where earnings are less value relevant. Thus, it appears reasonable to assume that our investor protection variables are effective surrogates for the ability of earnings to capture underlying economic performance in our analysis.

4.4 ADDITIONAL ANALYSES CONTROLLING FOR ACCOUNTING, OPERATING AND FINANCING CHARACTERISTICS

We include industry dummy variables in our hypothesis test to control for the characteristics identified in DeFond and Hung [2003a] as factors influencing analysts' propensity to forecast cash flows in the U.S. We do not directly use the specific measures identified in DeFond and Hung [2003a] because the data requirements greatly reduce our sample size.²² However, in order to investigate whether these firm-level variables are likely to be omitted correlated variables, we gather financial statement data from Compustat Global Vantage, and run the following logit regression:

²² This is primarily due to the relatively small coverage of international companies in financial information databases such as Compustat Global Vantage and Worldscope.

$$\begin{aligned}
\text{Cash flow indicator} = & \beta_0 + \beta_1(\text{Antidirector rights}) + \beta_2(\text{Law enforcement}) + \beta_3(\text{Disclosure}) + \\
& \beta_4(\text{Foreign investment}) + \beta_5(\text{Audit quality}) + \beta_6(\text{Accounting accrual}) + \\
& \beta_7(\text{Number of analysts}) + \beta_8(\text{Firm size}) + \beta_9(\text{Largest 20}) + \\
& \beta_{10}(\text{Magnitude of Accrual}) + \beta_{11}(\text{Capital intensity}) + \\
& \beta_{12}(\text{Earnings volatility}) + \beta_{13}(\text{LossD}) + \beta_{14}(\text{Leverage}) + \varepsilon \quad (4)
\end{aligned}$$

Where:

Accounting accrual = An index representing the degree to which the accounting system moves away from a cash method measure of performance. A higher index value indicates higher use of accrual accounting.

Magnitude of accrual = Total accrual/ total assets, where total accrual equals Depreciation – (change in non-cash current assets) + (change in current liability other than short-term debt).

Capital intensity = Gross property, plant and equipment/Total assets.

Earnings volatility = Coefficient of variation of earnings, calculated as |standard deviation of earnings /mean of earnings|.

LossD = 1 if the firm-year observation has negative earnings and 0 otherwise.

Leverage = Total liabilities/Total assets.

The other variables are measured as in equation 1 above.

Since direct information on firms' cash flows is not widely available in many countries (Leuz et al. [2003]), we are unable to calculate the magnitude of accruals as the difference between net income and operating cash flows (as in DeFond and Hung [2003a]). Instead we estimate this measure as depreciation expense minus the change in non-cash current assets plus the change in current liabilities other than short-term debt. We also include a country-level measure (termed accounting accrual) that controls for differences in the magnitude of accruals that are due to differences in country's accounting rules.²³ This variable is constructed as in Hung [2000] and uses country-specific accounting standards to capture the extent to which each country's accounting system deviates from cash basis accounting. Unlike DeFond and Hung [2003a], we use a loss dummy variable and leverage to proxy for a company's financial health because the

²³ We do not include the country-level accounting accrual variable in the main test on Table 3 because the index is only available for 26 of our 33 sample countries. However, as a sensitivity test we rerun our test in Table 3 after including the country-level accounting accrual variable (for the sample with 26 countries). The result finds that the signs and significance levels of the average coefficients of all our country-level variables are consistent with the results reported in Table 3. In addition, the significance of the Z-statistic and t-statistic on the coefficient for the accounting accrual variable is significantly positive at p<1% (two-tailed).

applicability of Altman's Z score in an international setting is unclear and the data requirements to compute such a measure are relatively burdensome.²⁴ In addition, we are unable to include the accounting choice heterogeneity variable used in DeFond and Hung [2003a] because detailed accounting choice data on international companies are not available. Finally, we trim the top and bottom 1% of the sample population with respect to magnitude of accruals, capital intensity, earnings volatility and leverage.

Table 5 reports the results for this additional analysis. As expected, our sample size is greatly reduced (by more than half) due to the additional data requirement. Panel A of Table 5 reports the descriptive statistics for the additional control variables and Panel B reports the results for the multivariate analysis. The results in Panel B indicate that the signs and significance levels of the average coefficients for all our country-level variables remain consistent with the result reported in Table 3. In addition, while the country-level accounting accrual variable and firm-level capital intensity variable are significant in the predicted direction at $p < 1\%$ (two-tailed), the coefficients on the other accounting, operating and financing characteristics are insignificant. This is consistent with at least two (non-mutually exclusive) explanations. First, the country-level institutional factors may simply dominate many of the firm-level factors in explaining differences in analysts' propensity to forecast cash flows internationally. Second, many of the insignificant firm-level variables may not be good surrogates, in a cross-country setting, for the constructs they attempt to capture. For example, Rajan and Zingales [1995] point out that leverage is unlikely to capture financial distress for companies in credit-oriented economies.

²⁴ We note that we drop the variable indicating cross-listed firms in this additional analysis because it is difficult to identify the data for cross-listed securities in Global Vantage.

5. *Additional Evidence from Analyzing Long-window Returns-earnings Relations*

Finding support for our hypothesis in the above tests is consistent with analysts forecasting cash flows when earnings are less likely to reflect underlying economic performance. That is, our results suggest that weak investor protection creates a setting in which investors find earnings difficult to interpret. While the results from our tests suggest that other factors are also important, in this section we attempt to find corroborating evidence on our hypothesis by comparing the returns-earnings associations and earnings response coefficients (ERCs) across the firms with and without cash flow forecasts. If firms with cash flow forecasts tend to have earnings that are less likely to capture underlying economic events, we expect those firms to have lower returns-earnings associations and ERCs.

We obtain data on cum-dividend daily stock price returns from the Center for Research in Security Prices (CRSP) for U.S. companies and returns calculated using total return index from *Datastream* for non-U.S. companies. The price data are from *I/B/E/S Summary History Files (U.S. Edition* for U.S. and Canadian firms and *International Edition* for firms in other countries). We trim the top and bottom 1% of the sample population with respect to changes in earnings and cumulative 15-month returns. Prior studies have identified several important factors affecting cross-section returns and earnings relation (Freeman and Tse [1992], Hayn [1995], Lipe, Bryant and Widener [1998]). In particular, Lipe et al. [1998] conclude that it is important to control for losses and nonlinearity in a cross-sectional return-earnings regression. Thus, we include a loss dummy variable and a non-linear term $|\Delta Earnings| * \Delta Earnings$ to control for the loss firm-years and the non-linearity in the return-earnings relation (Lipe et al. [1998]).²⁵

²⁵ Prior research finds that the earnings response coefficient also depends on firm and country characteristics, such as firm growth and the information environment (Collins and Kothari [1989], Easton and Zmijewski [1989], Lipe et al. [1998], Ball et al. [2000]). We do not control for these factors in our Table 6 regression because we are interested in

We compare the returns-earnings association across the firms with and without cash flow forecasts by estimating the following regression for each group of firms.

$$15\text{-month CAR} = \beta_0 + \beta_1(\text{LossD}) + \beta_2(\Delta\text{Earnings}) + \beta_3(\text{LossD} * \Delta\text{Earnings}) + \beta_4(|\Delta\text{Earnings}| * \Delta\text{Earnings}) + \Sigma D_{\text{year}} + \varepsilon \quad (5)$$

Where:

15-month CAR = 15-month cumulative market-adjusted stock returns ending three months after fiscal yearend. Monthly market-adjusted stock return is equal to monthly return minus monthly equal-weighted CRSP index for U.S. firms, and equal to monthly return minus return on an equal-weighted index for all within-country firms covered by both *I/B/E/S* and *Datastream* for non-U.S. firms.

$\Delta\text{Earnings}$ = Change in earnings scaled by beginning-of-year price, where earnings is *I/B/E/S* reported earnings per share.

LossD = 1 if the firm-year observation has negative earnings and 0 otherwise.

ΣD_{Year} = Dummies for years 1994 through 1998. For ease of presentation, year dummy coefficients are suppressed.

We test whether the difference in earnings response coefficients across the firms with and without cash flow forecasts is statistically significant by estimating the regression in model (5) after including a dummy variable, *CashD*, indicating whether the firms have cash flow forecasts. Specifically, we estimate the following regression:

$$15\text{-month CAR} = \beta_0 + \beta_1(\text{CashD}) + \beta_2(\text{LossD}) + \beta_3(\Delta\text{Earnings}) + \beta_4(\text{CashD} * \Delta\text{Earnings}) + \beta_5(\text{LossD} * \Delta\text{Earnings}) + \beta_6(|\Delta\text{Earnings}| * \Delta\text{Earnings}) + \Sigma D_{\text{year}} + \varepsilon \quad (6)$$

Panel A of Table 6 reports descriptive statistics for earnings changes and cumulative market-adjusted returns. The first two rows indicate that the mean and median earnings changes are similar between firms with and without cash flow forecasts. By contrast, the mean and median 15-month cumulative market-adjusted returns for the firms with cash flow forecasts are not only significantly smaller than for the firms without cash flow forecasts, the difference is relatively large. However, both groups report negative mean and median returns.

how these characteristics explain the difference in earnings response coefficients across firms with and without cash flow forecasts.

Panel B of Table 6 reports the results of our returns-earnings regression. This analysis finds that the adjusted R-square is 0.08 for firms with cash flows forecasts and 0.11 for firms without cash flow forecasts, consistent with earnings being less value relevant for firms with cash flows forecasts.²⁶ Panel C of Table 5 reports the results of the regression that compares ERCs across the firms with and without cash flow forecasts. This analysis indicates that the coefficient on $\text{CashD} * \Delta \text{Earnings}$ is significantly negative at $p < 1\%$ (two-tailed). The lower coefficient on the changes in earnings for firms with cash flow forecasts is consistent with our logit analysis that finds cash flow forecast firms have country-level institutional characteristics that limit earnings' usefulness.

In summary, the additional analysis reported in Table 6 finds that firms with cash flow forecasts tend to have lower returns-earnings associations and lower ERCs compared to firms without cash flow forecasts, consistent with these firms reporting earnings that are less useful to investors. Thus, while we also expect other factors to be important in analysts' forecasting decisions, these results corroborate the evidence from our hypothesis tests suggesting that analysts forecast cash flows when weak investor protection results in earnings that are less likely to capture underlying economic performance.

6. Robustness Tests

6.1 EVALUATION OF POTENTIAL MULTI-COLLINEARITY

Because Table 2 finds that the correlations between some of our independent variables are reasonably large, we follow the procedure recommended in Allison [1999] to assess whether multi-collinearity appears to impact the coefficient estimates in our logit models. Specifically, we estimate our model using an OLS regression after adjusting the linear combinations of our

²⁶ The magnitudes of the R-squares reported in Panel B of Table 6 are consistent with the magnitudes found in the 7 countries examined in Ball et al. [2000] that range from 3.4% to 13.7%.

independent variables with the weight matrix used in the maximum likelihood algorithm. We then use the OLS regression diagnostics to detect potential multi-collinearity among our independent variables (Belsley, Kuh and Welsch [1980]). The results (not tabulated) indicate that we do not have a multi-collinearity problem with our independent variables in the logit regression in Table 3 (All of the variance inflation statistics are lower than commonly used cutoff of 4.0). Thus, the evidence suggests that multi-collinearity does not influence the inferences we draw from our analyses in Table 3.

6.2 CONTROLLING FOR MARKET DEVELOPMENT

An alternative explanation for finding an association between cash flow forecasts and our surrogates for earnings' usefulness is the level of capital market development. For example, less developed capital markets tend to have several characteristics that we expect to increase the demand for cash flow forecasts, such as poor corporate governance and prevalent earnings management. However, less developed capital markets also have characteristics that are likely to limit analysts' abilities to produce and disseminate cash flow forecasts, such as weak communication infrastructure.²⁷ Limitations on analysts' activities in less developed capital markets are consistent with Chang et al. [2000], who find that less developed markets attract fewer analysts. Therefore, while its sign is unpredictable, we replicate our hypothesis test in Table 3 after including a control variable for the degree of capital market development. We measure capital market development as a country's market capitalization divided by its GNP (La Porta et al. [1997], Chang et al. [2000]). The result (not tabled) finds that the signs and significance levels of the average coefficients of all our country-level variables are consistent with the result reported in Table 3. In addition, the Z-statistic and t-statistic on the coefficient for capital market development

²⁷ Bushman and Smith [2001] suggest that good communication infrastructure results in financial information being widely, quickly and cheaply disseminated to economic agents through distribution channels such as the financial press, radio, television and the Internet.

is significantly negative at $p < 1\%$ (two-tailed). Thus, our results do not appear to be explained by the level of capital market development.

6.3 ALTERNATIVE MEASURE FOR FOREIGN INVESTMENT

Guenther and Young [2003] also use the measure of foreign equity investment compiled by World Bank to capture foreign investment, except they scale by gross capital formation instead of GDP. We test the robustness of our foreign investment measure by rerunning the regression in Table 3 after replacing our current foreign investment measure with the measure used in Guenther and Young [2003]. The result (not tabled) finds that the signs and significance levels of the average coefficients of all our country-level variables are consistent with the result currently reported in Table 3. Thus, our results do not appear to be sensitive to this alternative measure of the foreign investment variable.

6.4 CONTROLLING FOR ENDOGENEITY BETWEEN CASH FLOW FORECASTS AND FOREIGN INVESTMENT

A potential problem with our variable that captures foreign investment is that the extent of foreign investment might be affected by analysts' cash flow forecasts. Specifically, the presence of analysts' cash flows for foreign firms might stimulate foreign investors' interests in these firms. Thus, to control for the potential endogeneity between our dependent variable and foreign investment measure, we rerun our analysis using a two stage regression procedure. In the first stage we estimate an ordinary least squares regression model with our foreign investment measure as the dependent variable, and independent variables that include our measures of investor protection, accounting disclosure and audit quality, as well as dummy variables indicating whether the country has German, Scandinavia or French legal origins. We include legal origins because they are predetermined (the origins of most legal systems are several centuries old) and commonly used as instrumental variables in prior studies (e.g., Leuz et al. [2003]). In the second stage we

rerun our regression in Table 3 using a probit regression, with our first stage predicted value of foreign investment as the independent variable for foreign investment.²⁸ The results (not tabled) find that the signs and significance levels of the coefficients on all our country-level variables are consistent with the results currently reported in Table 3. Thus, our results do not appear to be influenced by the endogeneity between our foreign investment measure and dependent variable.

6.5 CONTROLLING FOR POTENTIAL TIME-SERIES CORRELATION

Our primary analysis in Table 3 reports Fama-MacBeth [1973] statistics, which control for potential *cross-sectional* correlation among the error terms in our regressions. To control for potential *time-series* correlation among our regression error terms we repeat our analysis in Table 3 after including only one randomly selected annual observation for each firm in our analysis. The results (not tabled) find that the signs and significance levels of the average coefficients of all our country-level variables are consistent with the results currently reported in Table 3. Thus, our primary results do not appear to be affected by time-series correlation among the regression error terms.

6.6 DROPPING JAPAN AND THE U.S.

Panel A of Table 1 reports that Japan and the U.S. have a disproportionately large number of observations compared to the other countries included in our analysis. To test the sensitivity of our results to including these countries, we rerun our analyses in Table 3 after sequentially dropping Japan and the U.S. The results (not tabled) show that the signs and significance levels of the average coefficients on our country-level variables are consistent with the results currently reported in Table 3, with the following exceptions: (1) after dropping Japan, the coefficient on law enforcement variable becomes significant at $p < 10\%$ level, and (2) after dropping the U.S., the

²⁸ We use a probit regression instead of logit regression in the second stage because the simultaneous system requires normally distributed residuals.

coefficient on audit quality variable becomes significant at $p < 5\%$ (two-tailed). Thus, while the significance of the coefficient on law enforcement (audit quality) becomes weaker after dropping Japan (the U.S.), our primary conclusions are not sensitive to excluding Japan or the U.S. from our sample.

7. Summary and Limitations

The purpose of this study is to examine the association between country-level institutional factors and analysts' propensity to forecast cash flows. We hypothesize that investors are likely to demand cash flow information when countries' legal environments limit earnings' usefulness. Cash flows are expected to help investors in this setting because prior research finds that cash flows are useful in supplementing and interpreting the information contained in earnings. Thus, because analysts have market-based incentives to meet investors' demands for value-relevant information, we predict that analysts are more likely to forecast cash flows in countries where weak investor protection limits earnings' usefulness.

Consistent with our predictions, we find that analysts are more likely to forecast cash flows for firms in countries with weaker investor protection. We also find that cash flow forecasts are more likely in countries with higher accounting disclosure, larger foreign investment and lower audit quality. In addition, we find that the returns-earnings association and earnings response coefficients are lower for firms with cash flow forecasts than for firms without cash flow forecasts, consistent with earnings being less useful among firms for which analysts forecast cash flows.

We note, however, that our investigation is subject to several limitations that are known to be associated with cross-country research designs (Bushman and Smith [2001]). Specifically, our proxies for broad concepts such as the extent of investor protection may capture a number of country-level characteristics, suggesting that our regression results may suffer from omitted

correlated variables problems. In addition, because we analyze only 36 countries, our analysis necessarily has a small number of degrees of freedom. Given these limitations, we acknowledge that our results should be interpreted as suggestive (Bushman and Smith [2001]).

REFERENCES

- Ahearne, A., W. Grier and F. Warnock, 2000, Information costs and home bias: An analysis of U.S. holdings of foreign equities, Board of Governors of the Federal Reserve System International Finance Discussion Papers (December), number 691.
- Alford, A., J. Jones, R. Leftwich and M. Zmijewski, 1993, The relative informativeness of accounting disclosures in different countries, *Journal of Accounting Research* 31 (Supplement), 183-223.
- Ali, A. and L. Hwang, 2000, Country-specific factors related to financial reporting and the value relevance of accounting data, *Journal of Accounting Research* 38, 1-22.
- Allison, P., 1999, *Logistic Regression Using the SAS System: Theory and Application*. SAS Institute Inc., Cary, NC.
- Ball, R., S.P. Kothari and A. Robin, 2000, The effect of international institutional factors on properties of accounting earnings, *Journal of Accounting and Economics* 29, 1-51.
- Ball, R., A. Robin and J.S. Wu, 2000, Accounting standards, the institutional environment and issuer incentives: Effect on timely loss recognition in China, *Asia-Pacific Journal of Accounting and Economics* 7.2.
- Ball, R., A. Robin and J.S. Wu, 2001, Incentives versus standards: Properties of accounting income in four East Asian countries, and implications for acceptance of IAS, Simon School of Business Working paper No. FR 00-04, 2001.
- Barth, M., D. Cram and K. Nelson, 2001, Accrual and the prediction of future cash flows, *The Accounting Review* 76, 27-51.
- Bartov, E., S. Goldberg and M. Kim, 2001, The valuation-relevance of earnings and cash flows: An international perspective, *Journal of International Financial Management and Accounting* 2, 103-132.
- Basu, S., L. Hwang and C. Jan, 1998, International variation in accounting measurement rules and analysts' earnings forecast errors, *Journal of Business Finance and Accounting* 26, 1207-1247.
- Becker, C., M. L. DeFond, J. Jiambalvo and K.R. Subramanyam, 1998, The effects of audit quality on earnings management, *Contemporary Accounting Research* 15, 1-24.
- Belsley, D.A., E. Kuh and R.E. Welsch, 1980, *Regression Diagnostics*, Wiley, New York, NY.
- Bernard, V, 1987, Cross-sectional dependence and problems in inference in market-based accounting research, *Journal of Accounting Research* 25, 1-48.

- Bowen, R., D. Burgstahler and L. Daley, 1987, The incremental information content of accruals versus cash flows, *The Accounting Review* 62, 723-747.
- Brown, L. and M. Rozeff, 1978, The superiority of analyst forecasts as measures of expectations: Evidence from earnings, *The Journal of Finance* 33, 1-16.
- Bushman, R.M, J.D., Piotroski and A.J. Smith, 2003, What determines corporate transparency? Working paper, University of Chicago and North Carolina University.
- Bushman, R.M. and A.J. Smith, 2001, Financial accounting information and corporate Governance, *Journal of Accounting and Economics* 32, 237-333.
- Center for International Financial Analysis & Research, 1995, *International Accounting and Auditing Trends*, CIFAR Publications, Inc. Princeton, NJ.
- Chang, J.J., T. Khanna and K.G. Palepu, 2000, Analyst activity around the world, Working paper, Harvard Business School and the Wharton School.
- Choi, J. and T.J. Wong, 2002, Auditor choice and legal environments: An international investigation, Working paper, The Hong Kong University of Science and Technology, 2002.
- Craswell, A., J. Francis and S. Taylor, 1995, Auditor brand name reputations and industry specialization, *Journal of Accounting and Economics* 20, 297-322.
- Collins, D. and S.P. Kothari, 1989, An analysis of intertemporal and cross-sectional determinants of earnings response coefficients, *Journal of Accounting and Economics* 11, 143-181.
- DeFond, M.L., J. Francis and T.J. Wong, 2000, Auditor industry specialization and market segmentation: Evidence from Hong Kong, *Auditing: A Journal of Practice and Theory* 19, 49-66.
- DeFond, M.L. and M. Hung, 2003a, An empirical analysis of analysts' cash flow forecasts, *Journal of Accounting and Economics* 35, 73-100.
- DeFond, M.L. and M. Hung, 2003b, Investor protection and corporate governance: Evidence from worldwide CEO turnover, *Journal of Accounting Research*, forthcoming.
- DeFond, M.L. and J. Jiambalvo, 1993, Factors related to auditor-client disagreements over income-increasing accounting methods, *Contemporary Accounting Research* 9, 415-431.
- Easton, P. and M. Zmijewski, 1989, Cross-sectional variation in the stock market response to accounting earnings announcements, *Journal of Accounting and Economics* 11, 117-141.
- The Economist, 2002, Badly in Need of Repair -- Special Report, Company Accounts, The Economist, May 4, 2002.

- Fama, E. F. and J. D. MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, *The Journal of Political Economy* 81, 607-636.
- Francis, J., I. Khurana and R. Pereira, 2003, The role of accounting auditing in corporate governance and the development of financial markets around the world, *Asia-Pacific Journal of Accounting & Economics*, forthcoming.
- Francis, J., E. Maydew and H. Sparks, 1999, The role of Big 6 auditors in the credible reporting of accruals, *Auditing: A Journal of Practice and Theory* 18, 17-34.
- Francis, J. and K. Schipper, 1999, Have financial statements lost their relevance? *Journal of Accounting Research* 37, 319-352.
- Francis, J. and D. Simon, 1987, A test of audit pricing in the small-client segment of the U.S. audit market, *The Accounting Review* 62, 145-157.
- Freeman, R.N. and S.Y. Tse, 1992, A nonlinear model of security price responses to unexpected earnings. *Journal of Accounting Research* 30, 185-209.
- Fried, D. and D. Givoly, 1982, Financial analysts' forecasts of earnings: A better surrogate for market expectations, *Journal of Accounting and Economics* 4, 85-107.
- Greene, W.E., 1993, *Econometric Analysis*. 2nd Edition, McMillan, New York, NY.
- Guenther, D. A. and D. Young, 2000, The association between financial accounting measures and real economic activity: A multinational study, *Journal of Accounting and Economics* 29, 53-72.
- Guenther, D. A. and D. Young, 2003, Financial reporting environments and international capital mobility, *Journal of Accounting Research* 41, 553-579.
- Harris, T., M. Lang and H.P. Moller, 1994, The value relevance of German accounting measures: An empirical analysis, *Journal of Accounting Research* 32, 187-209.
- Hayn, C., 1995, The information content of losses, *Journal of Accounting and Economics* 20, 125-153.
- Healy, P. M., A. P. Hutton and K.G. Palepu, 1999, Stock performance and intermediation changes surrounding sustained increases in disclosure, *Contemporary Accounting Research* 16, 485-520.
- Hung, M, 2000, Accounting standards and value relevance of earnings: An international analysis, *Journal of Accounting and Economics* 30, 401-420.
- I/B/E/S, 1999, *Accounting for Estimates: How I/B/E/S Handles Global Accounting Diversity*. I/B/E/S International, New York, NY.

- Kothari, S.P., 2001, Capital markets research in accounting, *Journal of Accounting and Economics* 31, 105-231.
- Kothari, S.P. and J. Zimmerman, 1995, Price and return models, *Journal of Accounting and Economics* 20, 155-192.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishny, 1997, Legal determinants of external finance, *The Journal of Finance* 52, 1131-1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 1998, Law and finance, *Journal of Political Economy* 106, 1113-1155.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishny, 2000, Investor protection and corporate governance, *Journal of Financial Economics* 58, 3-37.
- Lang, M.H., K.V. Lins and D. P. Miller, 2003, Concentrated control, analyst following and valuation: Do analysts matter most when investors are protected least?, Working paper, University of North Carolina at Chapel Hill, University of Utah and Indiana University.
- Lang, M.H. and R.J. Lundholm, 1996, Corporate disclosure policy and analyst behavior, *The Accounting Review* 71, 467-492.
- Leuz, C., D., Nanda and P. Wysocki, 2003, Earnings management and investor protection: An international comparison, *Journal of Financial Economics* 69,505-527.
- Lipe, R., L. Bryant and S. Widener, 1998, Do nonlinearity, firm-specific coefficients, and losses represent distinct factors in the relation between stock returns and accounting earnings? *Journal of Accounting and Economics* 4, 195-214.
- Meisler, L., 1997, The Complex World of Global Research, *Institutional Investor*, December 1997.
- Morgan Stanley Dean Witter, 1999, *Global Telecommunications Primer: A Guide to the Information Superhighway*, Morgan Stanley Dean Witter, June 1999.
- Mulford, C. and E. Comiskey, 2002, *The Financial Numbers Game*, John Wiley & Sons, Inc. New York, NY.
- North, D., 1990, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.
- O'Brien, P., 1988, Analysts' forecasts as earnings expectations, *Journal of Accounting and Economics* 10, 53-83.
- Palmrose, Z., 1988, An analysis of auditor litigation and audit service quality, *The Accounting Review* 63, 55-73.

- Penman, S., 2001, *Financial Statement Analysis & Security Valuation*, McGraw-Hill Irwin, New York, NY.
- Rayburn, J., 1986, The association of operating cash flows and accruals with security returns, *Journal of Accounting Research* 24, 112-138.
- Rajan, R. and L. Zingales, 1995, What do we know about capital structure? Some evidence from International data, *The Journal of Finance* 50, 1421-1460.
- Schipper, K., 1991, Commentary on analysts' forecasts, *Accounting Horizons* 5, 105-121.
- Watts, R. and J. Zimmerman, 1983, Agency problems, auditing, and the theory of the firm: Some evidence, *Journal of Law and Economics* 26-4, 613-633.
- White, H., 1984, *Asymptotic Theory for Econometricians*, Harcourt Brace Jovanovich, FL.
- Wild, J., L. Bernstein and K.R. Subramanyam, 2001, *Financial Statement Analysis*. McGraw-Hill Irwin, New York, NY.
- Wilson, P., 1987, The incremental information content of the accrual and funds components of earnings after controlling for earnings, *The Accounting Review* 62, 293-323.
- World Bank, 2001, *World Development Indicator*, World Bank, Washington, DC.

TABLE 1

Descriptive Analysis of International Firms with One-Year Ahead Earnings Forecasts Contained in the I/B/E/S Detail History U.S. and International Files from 1994 through 1999

Panel A: Number and proportion of firms with earnings and cash flow forecasts, by country			
Country	Total earnings forecasts	With cash flow forecasts	Proportion with cash flow forecasts
Portugal	237	205	86%
Australia	1,119	964	86%
Belgium	348	299	86%
Spain	567	484	85%
New Zealand	297	248	84%
Norway	429	355	83%
Netherlands	806	659	82%
France	1,667	1,355	81%
India	614	497	81%
Mexico	452	365	81%
Thailand	826	650	79%
Austria	304	239	79%
Sweden	743	514	69%
Singapore	692	477	69%
Germany	1,340	914	68%
Canada	1,977	1,344	68%
Denmark	487	330	68%
Korea	2,244	1,493	67%
Hong Kong	884	568	64%
Italy	721	454	63%
Malaysia	896	561	63%
Switzerland	700	431	62%
Philippines	355	205	58%
Finland	407	235	58%
Argentina	250	138	55%
Pakistan	147	80	54%
U.K.	4,103	2,209	54%
Brazil	727	363	50%
Ireland	211	99	47%
Columbia	57	23	40%
Greece	559	214	38%
Chile	353	130	37%
Turkey	909	235	26%
South Africa	809	133	16%
U.S.	19,966	1,688	8%
Japan	12,224	18	0%
Total	59,427	19,176	32%

TABLE 1, continued

Panel B: Number and proportion of firms with earnings and cash flow forecasts, by industry

Industry group	Total earnings forecasts	With cash flow forecasts	Proportion with cash flow forecasts
Energy	2,193	1,486	68%
Basic industries	7,366	3,073	42%
Public utilities	2,544	974	38%
Transportation	1,772	674	38%
Consumer-non durables	5,943	2,239	38%
Capital goods	10,232	3,550	35%
Consumer services	9,761	3,137	32%
Finance	9,167	2,243	24%
Consumer durables	2,172	529	24%
Health care	3,238	612	19%
Technology	5,039	659	13%
Total	59,427	19,176	32%

Panel C: Number and proportion of firms with earnings and cash flow forecasts, by year

Year	Total earnings forecasts	With cash flow forecasts	Proportion with cash flow forecasts
1994	8,625	2,201	26%
1995	9,882	2,851	29%
1996	10,224	3,449	34%
1997	10,528	3,378	32%
1998	10,275	3,390	33%
1999	9,893	3,907	39%
Total	59,427	19,176	32%

Panel D: Average number of analysts per firm making earnings and cash flow forecasts, by year

	Total	1994	1995	1996	1997	1998	1999
Average number of analysts per firm making							
Earnings forecasts	59,427	6.4	8.5	8.9	9.2	9.0	9.3
Earnings and cash flow forecasts	19,176	2.9	3.8	5.2	6.6	8.2	8.0

TABLE 2
Data and Descriptive Statistics

Panel A: Data and descriptive statistics for country-level data (N=36 Countries)						
Country	Proportion of cash flow forecasts	Antidirector rights	Law enforcement	Disclosure	Foreign investment	Audit quality
Argentina	55%	4	5.79	68	2.39	75.61
Australia	86%	4	9.51	80	1.48	82.71
Austria	79%	2	9.36	62	1.94	45.61
Belgium	86%	0	9.44	68	5.24	60.78
Brazil	50%	3	6.13	56	1.45	86.90
Canada	68%	5	9.75	75	1.60	91.34
Chile	37%	5	6.52	78	6.76	96.70
Colombia	40%	3	4.78	58	3.20	44.05
Denmark	68%	2	10.00	75	0.42	87.62
Finland	58%	3	10.00	83	0.88	82.90
France	81%	3	8.68	78	1.41	55.47
Germany	68%	1	9.05	67	0.27	56.57
Greece	38%	2	6.82	61	0.85	19.05
Hong Kong	64%	5	8.91	73	4.92	89.50
India	81%	5	5.58	61	0.63	10.56
Ireland	47%	4	8.36	81	3.59	92.48
Italy	63%	1	7.07	66	0.29	96.46
Japan	0%	4	9.17	71	0.00	71.71
Korea	67%	2	5.55	68	0.45	67.24
Malaysia	63%	4	7.72	79	5.04	73.37
Mexico	81%	1	5.37	71	2.76	79.82
Netherlands	82%	2	10.00	74	3.93	93.68
New Zealand	84%	4	10.00	80	3.42	88.46
Norway	83%	4	10.00	75	2.02	89.56
Pakistan	54%	5	3.67	73	1.46	1.90
Philippines	58%	3	3.47	64	1.83	76.39
Portugal	86%	3	7.19	56	1.22	36.14
Singapore	69%	4	8.93	79	9.82	88.83
South Africa	16%	5	6.45	79	0.57	92.97
Spain	85%	4	7.14	72	1.12	93.10
Sweden	69%	3	10.00	83	2.10	79.62
Switzerland	62%	2	10.00	80	1.48	89.91
Thailand	79%	2	4.89	66	1.28	57.24
Turkey	26%	2	4.79	58	0.40	45.45
U.K.	54%	5	9.22	85	2.19	73.69
U.S.	8%	5	9.54	76	1.12	94.54
Mean	61%	3.22	7.75	71.64	2.21	71.33
Median	65%	3.00	8.52	73.00	1.48	79.72
Std. dev.	23%	1.40	2.06	8.29	2.06	25.09

TABLE 2, continued

Panel B: Pearson correlation coefficients among country-level variables, two-tailed p-values in parentheses (N=36 countries)

Variable	Antidirector rights	Law enforcement	Disclosure	Foreign investment	Audit quality
Proportion of cash flow forecast	-0.30 (0.075)	0.19 (0.273)	0.02 (0.926)	0.16 (0.348)	-0.05 (0.773)
Antidirector rights		0.01 (0.944)	0.38 (0.020)	0.16 (0.338)	0.11 (0.527)
Law enforcement			0.58 (<0.001)	0.14 (0.415)	0.47 (0.004)
Disclosure				0.29 (0.090)	0.55 (<0.001)
Foreign investment					0.26 (0.121)

Panel C: Descriptive data for firm-level control variables (N=59,427 firm-years)

Variable	Mean	Median	Std. dev.
Number of analysts	8.60	6.00	8.31
Firm size	5.77	5.65	1.79
Largest 20	0.07	0.00	0.25
Cross-listed	0.01	0.00	0.11

Variable definitions:

Proportion of cash flow forecasts = Percentage of firms with cash flow forecasts in each country.

Antidirector rights = The anti-director right index constructed by La Porta et al. [1998]. The index aggregates the following components of investor rights: (1) the ability to vote by mail, (2) the ability to gain control of shares during the investors' meeting, (3) the possibility of cumulative voting for directors, (4) the ease of calling an extraordinary investors meeting, (5) the availability of mechanisms allowing minority investors to make legal claims against the directors, and (6) the presence of shareholders' preemptive rights that can be waived only by a shareholders' vote. The index ranges from 0 to 5, with higher scores for stronger shareholder rights.

Law enforcement institutions = An index based on the mean score of three legal enforcement variables reported in La Porta et al. [1998] and used in Leuz et al. [2003]. The three variables are (1) efficiency of the judicial system variable that assesses the efficiency and integrity of the legal environment (2) rule of law variable that assesses the rule and order tradition in a country, and (3) corruption variable that assesses the corruption in government. The index ranges from 0 to 10, with higher scores for a greater law enforcement.

Disclosure = An index developed for each country by the *Center for International Financial Analysis and Research* (CIFAR [1995]). The index represents the average percentage of 85 items included in the annual reports of a sample of domestic companies for each country, where higher scores equal greater disclosure.

Foreign investment = Investments made to establish a lasting management interest (10% or more of voting stock) in an enterprise in an economy other than that of the investor, in a company operating in the country in 1996, scaled by GDP. This variable is obtained from the World Bank World Development Indicators.

Audit quality = Market share of Big-Five audit firms in each country (Choi and Wong [2002]).

Number of analysts = Number of analysts issuing earnings forecasts for the firm each year.

Firm size = The natural logarithm of the market value of equity in millions of U.S. dollar at the beginning of year, where market value of equity equals stock price multiplied by number of shares outstanding according to the *I/B/E/S* database.

Largest 20 = Dummy variable equal to one if the firm is one of the largest 20 firms in its country, where size is measured by market value at the beginning of the year according to the *I/B/E/S* database.

Cross-listed = Dummy variable equal to one if the securities of the foreign firm are traded on the NYSE, AMEX or NASDAQ and equal to zero otherwise. The data source is the 2002 Depository Receipts Directory from Bank of New York

TABLE 3
Logistic Regression Analysis

Mean coefficients from 6 annual logit regressions where the dependent variable equals 1 if the firm has both earnings and cash flow forecasts and 0 if the firm has only earnings forecasts. Total observations = 59,427uding 19,176 cash flow forecasts.

$$\text{Cash flow indicator} = \beta_0 + \beta_1(\text{Antidirector rights}) + \beta_2(\text{Law enforcement}) + \beta_3(\text{Disclosure}) + \beta_4(\text{Foreign investment}) + \beta_5(\text{Audit quality}) + \beta_6(\text{Number of analysts}) + \beta_7(\text{Firm size}) + \beta_8(\text{Largest 20}) + \beta_9(\text{Cross-listed}) + \beta_{11}(\Sigma \text{DIndustry}) + \varepsilon$$

Independent variable	Predicted sign	Mean coefficient	Number of positive coefficients	Average change in odds (%) ^a	Two-tailed p-values for Z-statistics ^b	Two-tailed p-values for t-statistics ^c
Intercept	n/a	-3.33	n/a	n/a	0.004	0.004
<i>Country-level institutional factors</i>						
Investor protection variables						
- Antidirector rights	-	-0.80	0	-62	<0.001	<0.001
- Law enforcement	-	-0.29	0	-33	0.001	0.001
Disclosure	+	0.12	6	111	<0.001	<0.001
Foreign investment	+	0.46	6	99	<0.001	<0.001
Audit quality	-	-0.03	0	-34	0.005	0.005
<i>Firm-level control variables</i>						
Number of analysts	+	0.11	6	165	0.001	0.001
Firm size	+	-0.11	1	-16	0.112	0.114
Largest 20	+	0.59	6	17	0.004	0.003
Cross-listed	?	0.92	5	10	0.051	0.056
Industry dummy variables	Not reported					
<i>Average Pseudo-R²</i>	0.37					

Dindustry = Dummy variables indicating a firm's industry membership based on industry group classifications from I/B/E/S sector data. I/B/E/S classifies firms into eleven sectors: Finance, Health care, Consumer non-durables, Consumer services, Consumer durables, Energy, Transportation, Technology, Basic industries, Capital goods and Public utilities.

See Table 2 for definitions on other variables.

^a The percentage change in odds is $100 \times [\exp(s_j \beta_j) - 1]$, where s_j is the sample standard deviation of variable j and β_j is the estimated regression coefficient for variable j .

^b Z-statistics = mean of the t-statistic/ the standard error of the t-statistics (White [1984]).

^c t-statistics = mean of the coefficients / standard error of the coefficients (Fama and MacBeth [1973], Bernard [1987]).

TABLE 4

Logistic Regression Analysis after Replacing Investor Protection Variables with Earnings Management or Earnings' Value Relevance Score

Panel A: Mean coefficients from 6 annual logit regressions where the dependent variable equals 1 if the firm has both earnings and cash flow forecasts and 0 if the firm has only earnings forecasts. Total observations = 56,382, including 17,674 with cash flow forecasts.

$$\text{Cash flow indicator} = \beta_0 + \beta_1(\text{Earnings management}) + \beta_2(\text{Disclosure}) + \beta_3(\text{Foreign investment}) + \beta_4(\text{Audit quality}) + \beta_5(\text{Number of analysts}) + \beta_6(\text{Firm size}) + \beta_7(\text{Largest 20}) + \beta_8(\text{Cross-listed}) + \beta_9(\Sigma D\text{Industry}) + \varepsilon$$

Independent variable	Predicted sign	Mean coefficient	Number of positive coefficients	Average change in odds (%) ^a	Two-tailed p-values for Z-statistics ^b	Two-tailed p-values for t-statistics ^c
Intercept	n/a	-4.04	n/a	n/a	0.014	0.017
<i>Country-level institutional factors</i>						
Earnings management	+	0.07	6	90	0.002	0.004
Disclosure	+	0.06	6	39	0.002	0.002
Foreign investment	+	0.55	6	126	<0.001	0.002
Audit quality	-	-0.03	0	-41	0.002	0.002
<i>Firm-level control variables</i>						
Number of analysts	+	0.14	6	222	<0.001	<0.001
Firm size	-	-0.29	0	-39	0.003	0.004
Largest 20	+	1.17	6	32	<0.001	<0.001
Cross-listed	?	1.06	5	12	0.057	0.065
Industry dummy variables	Not reported					
<i>Average Pseudo-R²</i>	0.32					

TABLE 4, continued

Panel B: Mean coefficients from 6 annual logit regressions where the dependent variable equals 1 if the firm has both earnings and cash flow forecasts and 0 if the firm has only earnings forecasts. Total observations = 59,427, including 19,176 with cash flow forecasts.

$$\text{Cash flow indicator} = Y_0 + Y_1(\text{Value relevance of earnings}) + Y_2(\text{Disclosure}) + Y_3(\text{Foreign investment}) + Y_4(\text{Audit quality}) + Y_5(\text{Number of analysts}) + Y_6(\text{Firm size}) + Y_7(\text{Largest 20}) + Y_8(\text{Cross-listed}) + Y_n(\Sigma \text{Industry}) + \varepsilon$$

Independent variable	Predicted sign	Mean coefficient	Number of positive coefficients	Average change in odds (%) ^a	Two-tailed p-values for Z-statistics ^b	Two-tailed p-values for t-statistics ^c
Intercept	n/a	0.06	n/a	n/a	0.954	0.949
<i>Country-level institutional factors</i>						
Value relevance of earnings	-	-0.03	0	-22	0.002	0.002
Disclosure	+	0.03	5	21	0.127	0.137
Foreign investment	+	0.51	6	110	<0.001	<0.001
Audit quality	-	-0.04	0	-47	<0.001	<0.001
<i>Firm-level control variables</i>						
Number of analysts	+	0.13	6	199	<0.001	0.001
Firm size	-	-0.25	0	-34	0.007	0.009
Largest 20	+	0.99	6	27	0.001	<.001
Cross-listed	?	0.63	5	7	0.092	0.114
Industry dummy variables	Not reported					
<i>Average Pseudo-R²</i>	0.29					

Dindustry = Dummy variables indicating a firm's industry membership based on industry group classifications from I/B/E/S sector data. I/B/E/S classifies firms into eleven sectors: Finance, Health care, Consumer non-durables, Consumer services, Consumer durables, Energy, Transportation, Technology, Basic industries, Capital goods and Public utilities.

Earnings management = The aggregate earnings management score from Leuz et al. [2003]. Argentina, Brazil, Chile, Columbia, Mexico, New Zealand and Turkey are excluded from this analysis due to missing data on the earnings management score.

Value relevance of earnings = The ranked value of earnings' value relevance, where earnings' value relevance is based on a portfolio-return approach and equals cumulative market-adjusted return from an earnings-based hedge portfolio divided by that from a return-based hedge portfolio. The cumulation period for the stock returns is 15 months ending three months after fiscal yearend. The earnings-based (return-based) hedge portfolio is constructed by taking long positions in firms with the highest 40% of changes in earnings and taking short positions in firms with the lowest 40% of changes in earnings (market-adjusted returns) for the year (Ali and Hwang [2000], Hung [2000]).

See Table 2 for definitions on other variables.

^a The percentage change in odds is $100 \times [\exp(s_j \beta_j) - 1]$, where s_j is the sample standard deviation of variable j and β_j is the estimated regression coefficient for variable j .

^b Z-statistics = mean of the t-statistic/ the standard error of the t-statistics (White [1984]).

^c t-statistics = mean of the coefficients / standard error of the coefficients (Fama and MacBeth [1973], Bernard [1987]).

TABLE 5

Logistic Regression Analysis after Controlling for Accounting, Operating and Financing Characteristics. Total Observations = 22,910, Including 8,298 with Cash Flow Forecasts

Panel A: Descriptive statistics for additional control variables on accounting, operating and financing characteristics						
	<i>Country-level (N=26)</i>		<i>Firm-level (N=22,910)</i>			
	Accounting accrual	Magnitude of accrual (%)	Capital intensity	Earnings volatility	LossD	Leverage
Mean	0.66	6.04	0.64	2.70	0.12	0.55
Median	0.66	4.63	0.60	0.99	0.00	0.57
Standard deviation	0.14	5.54	0.36	5.31	0.32	0.19

Panel B: Mean coefficients from 6 annual logit regressions where the dependent variable equals 1 if the firm has both earnings and cash flow forecasts and 0 if the firm has only earnings forecasts.

$$\text{Cash flow indicator} = \beta_0 + \beta_1(\text{Antidirector rights}) + \beta_2(\text{Law enforcement}) + \beta_3(\text{Disclosure}) + \beta_4(\text{Foreign investment}) + \beta_5(\text{Audit quality}) + \beta_6(\text{Accounting accrual}) + \beta_7(\text{Number of analysts}) + \beta_8(\text{Firm size}) + \beta_9(\text{Largest 20}) + \beta_{10}(\text{Magnitude of accrual}) + \beta_{11}(\text{Capital intensity}) + \beta_{12}(\text{Earnings volatility}) + \beta_{13}(\text{LossD}) + \beta_{14}(\text{Leverage}) + \varepsilon$$

Independent variable	Predicted sign	Mean coefficient	Number of positive coefficients	Average change in odds (%) ^a	Two-tailed p-values for Z-statistics ^b	Two-tailed p-values for t-statistics ^c
Intercept	n/a	-1.92	n/a	n/a	0.224	0.327
<i>Country-level institutional factors</i>						
Investor protection variables						
- Antidirector rights	-	-1.30	0	-77	<0.001	<0.001
- Law enforcement	-	-0.45	0	-28	0.007	0.004
Disclosure	+	0.12	6	84	0.005	0.001
Foreign investment	+	0.49	6	113	<0.001	0.001
Audit quality	-	-0.04	0	-37	0.005	0.013
Accounting accrual	+	5.14	6	121	0.006	0.004
<i>Firm-level control variables</i>						
Information environment factors						
Number of analysts	+	0.10	6	160	0.006	0.006
Firm size	+	-0.22	1	-26	0.064	0.082
Largest 20	+	1.24	6	57	<0.001	<0.001
Accounting, operating and financing factors						
Magnitude of accrual	+	-0.08	3	0	0.806	0.853
Capital intensity	+	1.23	6	55	<0.001	<0.001
Earnings volatility	+	0.00	3	2	0.440	0.427
LossD	+	-0.03	1	-1	0.618	0.811
Leverage	+	-0.12	3	-2	0.640	0.597
<i>Average Pseudo-R²</i>		0.42				

TABLE 5, continued

Accounting accrual = An index represents the degree to which the accounting system moves away from a cash method measure of performance. A higher index value indicates higher use of accrual accounting.

Magnitude of accrual = Total accrual/ total assets, where total accrual equals Depreciation – (change in non-cash current assets) + (change in current liability other than short-term debt).

Capital intensity = Gross property, plant and equipment/Total assets.

Earnings volatility = Coefficient of variation of earnings, calculated as |standard deviation of earnings /mean of earnings|.

LossD = 1 if the firm-year observation has negative earnings and 0 otherwise.

Leverage = Total liabilities/Total assets.

See Table 2 for definitions on other variables.

^a The percentage change in odds is $100 \times [\exp(s_j \beta_j) - 1]$, where s_j is the sample standard deviation of variable j and β_j is the estimated regression coefficient for variable j .

^b Z-statistics = mean of the t-statistic/ the standard error of the t-statistics (White [1984]).

^c t-statistics = mean of the coefficients / standard error of the coefficients (Fama and MacBeth [1973], Bernard [1987]).

TABLE 6

Regression of 15-month CARs on Earnings Changes. Total Observations = 32,910, Including 10,956 with Cash Flow Forecasts.

Panel A: Descriptive statistics							
Variable	Observations	Mean	Standard deviation	Q1	Median	Q3	t-test p-value, Wilcoxon p-value
ΔEarnings	<i>With</i> cash flow forecasts	0.00	0.08	-0.02	0.00	0.02	0.272
	<i>Without</i> cash flow forecasts	0.00	0.08	-0.01	0.00	0.02	0.035
15-month CAR	<i>With</i> cash flow forecasts	-0.07	0.45	-0.35	-0.07	0.18	<0.001
	<i>Without</i> cash flow forecasts	-0.03	0.44	-0.27	-0.08	0.22	<0.001

Panel B: Regression results for observations with and without cash flows forecasts							
<i>15-month CAR = β₀ + β₁(LossD) + β₂(ΔEarnings) + β₃(LossD*ΔEarnings) + β₄(ΔEarnings *ΔEarnings) + ΣDyear + ε</i>							
	Intercept	LossD	ΔEarnings	LossD* ΔEarnings	ΔEarnings * ΔEarnings		Adj. R ²
<i>With</i> cash flow forecasts							
Coefficient	-0.18	-0.10	2.46	-0.52	-4.55		0.08
Two-tailed p-values	<0.001	<0.001	<0.001	<0.001	<0.001		
<i>Without</i> cash flow forecasts							
Coefficient	-0.13	-0.09	3.37	-0.77	-6.35		0.11
Two-tailed p-values	<0.001	<0.001	<0.001	<0.001	<0.001		

Panel C: Regression results for all firms								
<i>15-month CAR = β₀ + β₁(CashD) + β₂(LossD) + β₃(ΔEarnings) + β₄(CashD*ΔEarnings) + β₅(LossD*ΔEarnings) + β₆(ΔEarnings *ΔEarnings) + ΣDyear + ε</i>								
	Intercept	CashD	LossD	ΔEarnings	CashD* ΔEarnings	LossD* ΔEarnings	ΔEarnings * ΔEarnings	Adj. R ²
Coefficient	-0.14	-0.04	-0.09	3.11	-0.30	-0.68	-5.63	0.10
Two-tailed p-values	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	

TABLE 6, continued

Variable definitions:

15-month CAR = 15-month cumulative market-adjusted stock returns ending three months after fiscal yearend. Monthly market-adjusted stock return is equal to monthly return minus monthly equal-weighted CRSP index for U.S. firms, and equal to monthly return minus return on an equal-weighted index for all within-country firms covered by both *I/B/E/S* and *Datastream* for non-U.S. firms.

Δ Earnings = change in earnings scaled by beginning-of-year price. Earnings is *I/B/E/S* reported earnings per share.

CashD = 1 if the firm has earnings and cash flow forecasts available and 0 if the firm only has earnings forecasts available.

LossD = 1 if the firm has negative earnings and 0 otherwise.

Σ *Year* = Dummies for years 1994 through 1998. For ease of presentation, year dummy coefficients are suppressed.