

Does corporate governance transparency affect the accuracy of analyst forecasts?

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Abstract

Using country-level proxies for corporate governance transparency, this paper investigates how differences in transparency across 21 countries affect the average forecast accuracy of analysts for the country's firms. The association between financial transparency and analyst forecast accuracy has been well documented in previous published literature; however, the association between governance transparency and analyst forecast accuracy remains unexplored. Using the two distinct country-level factors isolated by Bushman *et al.* (2004), governance transparency and financial transparency, we investigate whether corporate governance information impacts on the accuracy of earnings forecasts over and above financial information. We document that governance transparency is positively associated with analyst forecast accuracy after controlling for financial transparency and other variables. Furthermore, our results suggest that governance-related disclosure plays a bigger role in improving the information environment when financial disclosures are less transparent. Our empirical evidence also suggests that the significance of governance transparency on analyst forecast accuracy is higher when legal enforcement is weak.

Key words: Corporate transparency; Corporate governance; Disclosures; Analyst forecasts

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1. Introduction

A 2002 Global Investor Opinion Survey conducted by McKinsey & Company highlights corporate governance as a significant investment criterion. Investors have higher confidence in companies with good corporate governance.¹ The past few years have witnessed major amendments to corporate and securities laws in many countries.² Increased public interest in governance transparency is also reflected in recent governance regulations that have been introduced by stock exchanges and regulators worldwide. As an example, the *Sarbanes–Oxley Act 2002* has taken a clear step towards stricter corporate governance in the USA.

To the extent that knowledge of a firm's governance structure is useful in assessing the credibility of financial information, governance-related disclosures aid users in assessing the quality of information and guide stakeholders in more accurately setting expectations about future performance.³ Examples of governance disclosures include information relating to the identity, remuneration and shareholdings of officers and directors, and identity and holdings of other major shareholders. That is to say, governance disclosures reveal who are in charge of governing the firm, how their incentives are structured, and how and where they have invested the financial resources (Bushman *et al.*, 2004).

Another recent survey conducted by the CFA Institute shows that analysts find companies' corporate governance practices very important in making investment decisions.⁴ Financial analysts are considered among the most important

¹ More than 70 per cent of investors surveyed by McKinsey & Company revealed that they are prepared to pay a premium averaging 12–14 per cent in North America and Western Europe; 20–25 per cent in Asia and Latin America; and over 30 per cent in Eastern Europe and Africa for firms with good corporate governance. The survey was undertaken in 2002 and is based on responses from over 200 institutional investors, collectively responsible for some \$US2 trillion of assets under management.

² Several European Union members are currently amending their corporate legislation to improve disclosure and address corporate governance issues. For example, Germany has new stock-exchange reforms and in the UK the Company Law Review highlights broader directors' duties. Similar changes have already taken place or are in progress in Chile, Mexico, Russia and Brazil.

³ Abarbanell and Bushee (1997) find evidence that security analysts use relevant corporate disclosure to formulate their forecasts.

⁴ In a survey of CFA members and candidates in the Asia-Pacific region, 75 per cent of the respondents view corporate governance practices as either 'extremely important' or 'very important' in making investment decisions (CFA Institute, 2004). Furthermore, Gompers *et al.* (2003) claim that corporate governance affects equity prices. They find that firms with stronger shareholder rights have higher firm value, higher profits, higher sales growth, lower capital expenditures, and made fewer corporate acquisitions. Ashbaugh *et al.* (2004) find evidence that firms with better governance present less agency risk to shareholders resulting in lower cost of equity capital (almost 8 per cent). Farber (2005) finds that the capital market participants appear to value governance improvements undertaken by fraudulent firms even though credibility remains an issue for these firms.

and influential users of financial reports (e.g. Schipper, 1991; Revsine *et al.*, 2004) and among the most important information intermediaries between firms and investors. In light of their information-processing ability and access to resources, they are typically viewed as sophisticated users of accounting information (e.g. Schipper, 1991; AICPA, 1994). In the present study, we investigate the impact of governance transparency, which is the availability of governance information to those outside of the firm, on analyst forecast accuracy after controlling for financial transparency (the availability and extent of financial information) using a sample from 21 countries. We use the country-level measures of governance transparency and financial transparency proposed by Bushman *et al.* (2004).⁵

The importance of corporate governance to financial analysts can be explained by two reasons. The first reason relates to the integrity or the credibility of the financial disclosures. It follows from the fact that the insiders are the major source of the financial disclosures. The second reason relates to the role of the governance disclosures in reducing uncertainty surrounding future performance. This follows from our argument that because the insiders are the major drivers of the firm performance, information relating to the corporate governance structure of the company should be useful to the analysts in forming expectations relating to future firm performance. Although corporate governance is closely related to the integrity of the financial information and that financial reporting quality is associated with analysts' forecast accuracy, the association between corporate governance disclosures and analyst forecasts remains largely unexplored. This motivates the present study.

Our results indicate a positive association between a country-level proxy for governance transparency and forecast accuracy after controlling for financial transparency. We further find that governance transparency is more important in explaining analyst forecast accuracy when financial disclosure is low. Finally, we find evidence that governance transparency takes on increased importance in jurisdictions with poor legal enforcement. Our results are robust to controlling for both firm- and country-level variables that have been shown in published reports to be related to forecast accuracy. Our study provides empirical evidence in support of the recently mandated strong corporate governance codes and enactments (such as the recent Sarbanes–Oxley Act in the USA). In addition, our study contributes to the existing published literature on analyst forecast accuracy by identifying and providing evidence that corporate governance information has a positive association with the accuracy of analyst forecasts.

⁵ Bushman *et al.* (2004) define corporate transparency as the availability of firm-specific information to those outside publicly traded firms, and it is conceptualized as an output from a multifaceted system whose components collectively produces, gather, validate and disseminate relevant information. They isolate two factors, governance transparency and financial transparency, as the important aspects of corporate transparency.

The remainder of this paper is organized as follows. In Section 2, we develop our hypotheses. We explain the sample and the research design in Section 3. We present and discuss the empirical results in Section 4 and Section 5 concludes.

2. Literature review and hypotheses development

In this section, we first discuss previous published literature relating to analyst forecast accuracy. We then present our hypotheses on how governance transparency is associated with forecast accuracy.

Lang and Lundholm (1996) find that forecast accuracy is positively related to corporate disclosure policies and firm size. Hwang *et al.* (1996) find that forecast accuracy is lower for loss firms than for profit firms. Kross *et al.* (1990) find that earnings variability is an important determinant of analyst forecast accuracy. Das and Saudagaran (1998) report similar findings. Hope (2003) finds that forecast accuracy is positively associated with disclosure level and the enforcement of accounting standards, suggesting that managers are more likely to follow prescribed accounting rules when they know that their accounting choices are better monitored (i.e. the ‘accounting uncertainty’ facing analysts is reduced).

Agency theory literature suggests that managers’ reporting incentives and insiders’ stock ownership can influence financial reporting quality (e.g. Jensen and Meckling, 1976), which is known to be linked to the accuracy of analysts’ earnings forecasts (e.g. Hope, 2003). For instance, Leuz *et al.* (2003) suggest that managers can abuse accounting discretion to expand or maintain private control rights and to prevent outside monitoring.⁶

Given that financial reporting quality is not directly observable, financial statement users infer the quality of reported accounting numbers from various sources. One source of such information is the governance structure of a firm, which is known to affect financial reporting quality (e.g. Klein, 2002; Farber, 2005).

Klein (2002) finds a negative relation between audit committee independence and earnings management, suggesting that boards structured to be more independent of the chief executive officer (CEO) are more effective in monitoring the corporate financial accounting process. Farber (2005) examines whether the efforts taken by fraudulent firms to improve governance mechanisms influences informed capital market participants. The results indicate that analyst

⁶ Johnson *et al.* (2000) use a simple model to show that managerial agency problems can make countries with weak legal systems vulnerable to the effects of a sudden loss of investor confidence. The consequences can be a fall in asset values and a collapse of the exchange rate. Their evidence suggests that corporate governance in general, and the protection of minority shareholder rights in particular, matters a great deal for the extent of exchange rate depreciation and stock market decline in 1997–1998.

following and institutional holdings do not increase in fraud firms, but the firms have superior stock price performance, even after controlling for earnings performance.

To the extent that corporate governance affects the quality of reported accounting numbers security analysts use to generate forecasts, and that the quality of accounting numbers is linked to the degree to which the current accounting numbers (such as earnings) will persist into the future, analysts will be able to issue more accurate forecasts by learning about the governance structure of the firm. For example, if there is a firm with weak governance structure, analysts who are aware of the effects of the weak governance on reporting quality might rely less on the reported financial figures and instead use other sources of information (such as direct communication with managers including whisper forecasts) to generate more accurate forecasts. In contrast, analysts might use the provided accounting numbers relatively more in formulating their forecasts for firms with strong governance mechanisms in place.

Unless information is disclosed about governance mechanisms, market participants (including security analysts) might not have access to such information. Therefore, we argue that governance disclosures can help analysts better assess the quality of financial information, enabling them to issue more accurate earnings forecasts. Based on this discussion, our first hypothesis is:⁷

H₁: Governance transparency is positively associated with the accuracy of analysts' earnings forecasts after controlling for financial transparency.

Although financial transparency enables market participants to better assess firms' future performance by providing detailed information that is useful in predicting future earnings, governance transparency provides useful information in assessing the quality of financial information. Even if we posit that both financial and governance transparencies improve financial analysts' ability to predict future earnings, it is not clear whether these two types of disclosures will substitute or complement each other. For instance, it is possible that governance transparency plays a bigger role in improving analysts' information environment when financial transparency is low if analysts use governance-related information to complement the low level of financial disclosure. This might be the case if analysts exert greater effort to ensure the reliability of provided financial information by using the governance information when the disclosure level was low (when financial transparency is low). This reasoning leads us to our second hypothesis:

H₂: Governance transparency will be relatively more important in explaining analysts' forecast accuracy when financial transparency is low.

⁷ All hypotheses are stated in the alternative form.

Bushman *et al.* (2004) find that corporate transparency varies systematically with countries' legal/judicial environments. Previous published literature suggests that the demand for private enforcement mechanisms can be higher in the absence of a viable judicial system for enforcing contracts (e.g. Anderson and Bandiera 2001; Dixit, 2003). Therefore, one would expect that the security analysts' demand for transparent corporate disclosure would be higher in a weak legal enforcement environment. Moreover, Leuz *et al.* (2003) suggest that the quality of accounting numbers might be lower in weak legal environments. Therefore, in view of our earlier discussion, governance transparency can be a particularly important tool in assessing the credibility of the financial information in a weak legal environment. Hence, we predict that the relative importance of governance transparency will be higher in weak legal enforcement environments. Our next hypothesis is:

H₃: Governance transparency will be relatively more important in explaining analysts' forecast accuracy in a weak legal enforcement environment.

3. Research design and sample selection

In this section, we discuss in detail our measures of financial and governance transparency. We then present our regression models, followed by a discussion of our choice of sample.

3.1. Governance transparency and financial transparency

Bushman *et al.* (2004) focus on overall country-level measures of corporate transparency. They measure corporate transparency along three dimensions: corporate reporting, private information acquisition activities and information dissemination. They identify four factors to measure corporate reporting: the intensity of financial disclosures (*DISCL*), the intensity of governance disclosures (*GOVERN*), the timeliness of financial disclosures (*TIME*) and the accounting principles used to measure financial disclosures (*MEASURE*). They use analyst following (*ANALYST*) to proxy for the private information acquisition activities, and media coverage (*MEDIA*) to proxy for the intensity of the information dissemination. They use factor analysis to reduce the number of variables and to detect structure in the relations between variables. Using maximum likelihood estimation, they identify two significant factors. The first factor is called financial transparency (*FINTR*) as it captures the commonalities between the intensity and the timeliness of financial disclosures, analyst following and media penetration. The second factor is almost singularly dependent on the intensity of governance disclosures and is, hence, labelled as governance transparency (*GOVTR*). We explore the impact of the country-level proxy for governance transparency used by Bushman *et al.* on analyst forecast accuracy in our main analysis, controlling for financial transparency.

3.2. Regression models

We use the following model to test the association between analyst forecast accuracy (*AFA*) and the country-level corporate transparency measures. We regress *AFA* on *GOVTR* and *FINTR* in our basic model to test our Hypothesis 1:

$$AFA_{i,t} = \alpha_0 + \alpha_1 * GOVTR_j + \alpha_2 * FINTR_j + \varepsilon_{i,t}, \quad (1)$$

where *AFA* is the analyst forecast accuracy measured (at the firm level) as the negative of the absolute value of the difference between the Institutional Broker's Estimate System (IBES) consensus forecast available at the beginning of the fiscal year⁸ and the actual earnings per share for the year, scaled by stock price (consistent with, for example, Lang and Lundholm (1996)).⁹ Governance transparency (*GOVTR*) captures the intensity of the governance disclosures of the firm and is the output of the factor analysis performed by Bushman *et al.* (2004) on the individual measures of corporate transparency. As described above, *GOVTR* is measured at the country level. Financial transparency (*FINTR*) captures the intensity of the financial disclosures of the firm and is the output of the (country level) factor analysis performed by Bushman *et al.* (2004) on individual measures of corporate transparency.

We introduce *ENF*, which is a proxy for the level of legal enforcement in the country. We also control for firm-level determinants of analysts' forecast accuracy such as firm size, loss firms and volatility of earnings. Our variable *ENF* is based on a linear combination of the five enforcement variables in La Porta *et al.* (1997): efficiency of judicial system, rule of law, corruption, risk expropriation, and risk of contract repudiation.¹⁰ We also include three firm-level control variables. *SIZE* is the log of market value (in \$US millions) of equity at fiscal year end. *EVOL* is the standard deviation of earnings over the past 5

⁸ For example, for a December fiscal year end firm, a forecast at the beginning of year *t* means a forecast as of the end of December of year *t* – 1 (consistent with Lang and Lundholm (1996) among others).

⁹ Untabulated results show that no inferences are affected if we instead scale by the absolute value of actual earnings.

¹⁰ As the correlation matrix shows, the transparency variables (especially *GOVTR*) are highly correlated with *ENF*, and they do appear to cause some multicollinearity problems when we include the raw *GOVTR* and *ENF* variables together in the regression. When we compute the variance inflation factor (VIF) for instance, the VIF on *GOVTR* is close to 8, indicating a clear presence of collinearity. To circumvent this problem, we orthogonalize *ENF* with respect to the transparency variables by regressing *ENF* on the transparency variables and use the predicted residuals from this regression as our empirical measure of enforcement in the regressions. After employing this commonly used technique, there is no evidence of significant multicollinearity in our multivariate tests.

years. *LOSS* is a dummy variable that takes the value of 1 if the firm reported a loss, and zero otherwise.^{11,12}

$$AFA_{i,t} = \alpha_0 + \alpha_1 * GOVTR_j + \alpha_2 * FINTR_j + \alpha_3 * ENF_j + FIRMLEVELCONTROLS_{i,t} + \varepsilon_{i,t} \quad (2)$$

Previous research finds that corporate transparency (the components of which are financial transparency and governance transparency) varies systematically with countries' legal/judicial environments. Hence, we test our second and third hypotheses using a multiple interaction effects model wherein we regress analyst forecast accuracy on *FINTR*, *GOVTR*, *ENF* and three two-way interaction terms (*GOVTR*FINTR*, *GOVTR*ENF* and *FINTR*ENF*) to test for the individual and the joint effects of the transparency variables on forecast accuracy. The interaction terms *GOVTR*FINTR* and *GOVTR*ENF* directly test for Hypotheses 2 and 3, respectively. We also control for the interaction between *FINTR* and *ENF* using the interaction term *FINTR*ENF*. Coefficients γ_1 , γ_2 and γ_3 identify the individual effects (or the main effects) of governance transparency, financial transparency and enforcement on forecast accuracy. Coefficients γ_4 through γ_6 measure the joint effects of each transparency measure on the accuracy. In our empirical tests we also include firm-level control variables (not shown here for brevity).

$$AFA_{i,t} = \gamma_0 + \gamma_1 * GOVTR_j + \gamma_2 * FINTR_j + \gamma_3 * ENF_j + \gamma_4 * FINTR * GOVTR_j + \gamma_5 * FINTR * ENF_j + \gamma_6 * GOVTR * ENF_j + \varepsilon_{i,t} \quad (3)$$

3.3. Sample selection procedure

Our sample consists of non-US firms cross-listed in the USA as American Depositary Receipts (ADR).¹³ The sample period spans from 1992 to 2002. In

¹¹ In our empirical tests we also control for industry and year effects.

¹² We use a combination of firm-level variables and country-level variables in our analysis. The approach of combining firm-level and country-level variables is common in the international accounting and finance literature. A small sampling of such studies includes Khanna *et al.* (2004), DeFond and Hung (2004), Haw *et al.* (2004) and Hope (2003).

¹³ An ADR is a US security of a non-US firm cross-listed under the US *Securities Act of 1934*. It is a negotiable security, issued by a US commercial bank, traded on major stock exchanges or over-the-counter, and is settled, cleared and transferred according to standard US practices. ADR firms have to comply with Securities and Exchange Commission filing requirements by either filing the 10-K report or filing Form 20-F that reconciles foreign GAAP earnings and shareholders' equity with the corresponding US GAAP figures. For a detailed discussion of ADR firms and their attributes, see Hope *et al.* (2005).

any international comparison, heterogeneity in the sample in variables other than the test variables is a major concern for the researcher. Heterogeneity across several dimensions in a sample increases the possibility of correlated omitted variables, which might bias test results. Firms typically list as ADR to raise capital. Lang *et al.* (2003) and Khanna *et al.* (2004) find that ADR firms are more ‘advanced’ in several dimensions than non-ADR firms. Furthermore, ADR firms are under the regulatory scrutiny of the Securities and Exchange Commission (e.g. Hope *et al.*, 2005). Therefore, by using ADR firms we reduce heterogeneity in our sample along important dimensions such as disclosure levels and Generally Accepted Accounting Principles (GAAP) differences, access to capital markets, how ‘advanced’ the firms are, and regulatory scrutiny. However, ADR firms might be less affected by domestic economic conditions than firms that are not cross-listed in the USA. However, this should work against us finding support for our hypotheses that the governance transparency in the firm’s country will matter.

We have 2130 ADR firms from the Bank of New York Guide to Depository Receipts 2000 list. Our transparency variables are measured at the country level whereas the ADRs are cross-listed firms. Using country-level figures would most likely work against us finding results to support our hypotheses. Firm-level financial data are from Compustat and forecasts from IBES. We exclude observations that fall in the top and bottom 1 per cent of the pooled distribution for the regression variables (e.g. Kothari and Zimmerman, 1995) to minimize the effects of outliers. We also delete observations whose regression residuals fall outside four standard deviations from the mean (e.g. Amir and Sougiannis, 1999).¹⁴ We end up with a final sample of 1100 firm-year observations.¹⁵

4. Empirical results

Table 1 presents the descriptive statistics for our sample. Panel A presents the two factors (governance transparency and financial transparency), the governance subcomponents and the various country- and firm-level control variables. Governance transparency is higher for the UK, Ireland, Sweden, Australia, Malaysia and Singapore. Our analysis in Panel B reveals that forecast accuracy has a mean and median of 2.9 and 1.2 per cent (of stock price), respectively. For comparison, the mean (median) forecast error was 4.2 per cent (0.8 per cent) in Lang and Lundholm’s US firm sample (1996), and 3.5 per cent (0.6 per cent) in Hope’s (2003) international sample. Slightly over 10 per cent of our sample firms are loss firms.

Table 2 presents Pearson correlations among our regression variables. Forecast accuracy is significantly positively correlated with both governance transparency

¹⁴ Our empirical results are similar with alternative outlier removal filters.

¹⁵ We have conducted standard statistical tests to ensure that our empirical results are not unduly affected by having some firms included in the sample more than once.

Table 1
Descriptive statistics

Panel A: Country- and firm-level data

Country	N	Independent variable	Transparency variables		Control variables			
		AFA	GOVTR	FINTR	ENF	SIZE	EVOL	LOSS
Australia	49	−0.019	1.080	0.355	46.500	8.274	0.553	0.061
Belgium	10	−0.015	−0.067	0.497	47.400	7.361	0.882	0.100
Brazil	43	−0.057	−0.869	0.098	32.300	6.536	0.738	0.093
Chile	18	−0.025	0.210	−0.085	33.870	7.030	0.998	0.111
Denmark	10	−0.013	−0.082	0.475	49.000	8.606	0.290	0.000
Finland	12	−0.011	0.752	0.557	48.800	8.934	0.605	0.083
France	97	−0.023	−0.628	1.265	44.900	8.516	0.741	0.103
Germany	53	−0.028	−0.383	1.617	46.325	8.711	1.536	0.094
Hong Kong	61	−0.023	0.568	0.663	43.900	8.128	0.262	0.033
Ireland	19	−0.015	1.046	−0.179	43.700	7.504	0.568	0.158
Italy	55	−0.029	−0.582	1.157	39.700	7.878	0.664	0.091
Japan	103	−0.018	0.355	0.684	46.900	9.519	1.014	0.184
Malaysia	10	−0.015	1.241	0.234	38.500	7.366	0.086	0.000
Mexico	113	−0.061	−0.808	0.386	30.000	6.618	0.646	0.115
Netherlands	102	−0.014	0.380	1.342	49.300	8.582	1.372	0.108
Norway	14	−0.045	0.553	0.279	49.600	7.377	1.139	0.286
Singapore	25	−0.020	1.336	0.459	45.000	7.430	0.209	0.000
Spain	28	−0.011	0.154	0.877	39.400	9.695	0.632	0.000
Sweden	47	−0.045	1.062	0.801	49.000	7.869	1.028	0.149
Switzerland	19	−0.007	0.558	0.814	50.000	10.089	0.893	0.000
UK	212	−0.019	1.029	0.754	47.000	8.612	0.864	0.108

Panel B: Distribution of the regression variables

	Mean	SD	Percentiles		
			25	50	75
AFA	−0.027	0.045	−0.029	−0.010	−0.004
GOVTR	0.262	0.724	−0.582	0.380	1.029
FINTR	0.774	0.417	0.459	0.754	1.157
ENF	43.730	6.112	43.700	46.800	47.000
SIZE	8.240	1.873	7.189	8.466	9.496
EVOL	0.835	1.088	0.226	0.509	1.029
LOSS	0.103	0.304	0.000	0.000	0.000

N is the number of observations. Forecast accuracy (AFA) is measured as the negative of the absolute value of the difference between the Institutional Broker's Estimate System consensus forecast available at the beginning of the fiscal year and the actual earnings per share for the year, scaled by stock price. *FINTR* and *GOVTR* are financial and governance transparency factor scores obtained from Bushman *et al.* (2004). *ENF* is a linear combination of the five enforcement variables in La Porta *et al.* (1997): efficiency of judicial system, rule of law, corruption, risk expropriation, and risk of contract repudiation. *SIZE* is the log of market value of equity at fiscal year end. *EVOL* is the standard deviation of earnings over the past 5 years. *LOSS* is a dummy variable that takes the value of 1 if the firm reported a loss, and 0 otherwise. SD, standard deviation.

Table 2
Pearson correlation matrix

	<i>AFA</i>	<i>GOVTR</i>	<i>FINTR</i>	<i>ENF</i>	<i>SIZE</i>	<i>EVOL</i>
<i>AFA</i>	1.000					
<i>GOVTR</i>	0.196	1.000				
<i>FINTR</i>	0.123	−0.159	1.000			
<i>ENF</i>	0.265	0.662	0.476	1.000		
<i>SIZE</i>	0.406	0.192	0.242	0.360	1.000	
<i>EVOL</i>	−0.049 ^a	−0.009 ^a	0.169	0.119	0.113	1.000
<i>LOSS</i>	−0.460 ^a	−0.008 ^a	−0.007 ^a	0.016 ^a	−0.131	0.134

^aCorrelation coefficients that are not significant at conventional levels. All other correlation coefficients are significant at the 2 per cent level or better. Forecast accuracy (*AFA*) is measured as the negative of the absolute value of the difference between the Institutional Broker's Estimate System consensus forecast available at the beginning of the fiscal year and the actual earnings per share for the year, scaled by stock price. *FINTR* and *GOVTR* are financial and governance transparency factor scores obtained from Bushman *et al.* (2004). *ENF* is a linear combination of the five enforcement variables in La Porta *et al.* (1997): efficiency of judicial system, rule of law, corruption, risk expropriation, and risk of contract repudiation. *SIZE* is the log of market value of equity at fiscal year end. *EVOL* is the standard deviation of earnings over the past 5 years. *LOSS* is a dummy variable that takes the value of 1 if the firm reported a loss, and 0 otherwise.

and financial transparency.¹⁶ Forecast accuracy is positively correlated with enforcement and firm size, and negatively correlated with the indicator variable for loss firms. Forecast accuracy is negatively but not significantly correlated with earnings volatility. These findings are consistent with previous published literature. As is common, the country-level variables are significantly correlated. For this reason we show results of regressions that both include and exclude *ENF* (compare footnote 10).

Ordinary least squares regression (OLS) results are presented in Panel A of Table 3. The results of models 1 and 2 indicate that governance transparency and financial transparency are significantly associated with the analyst forecast accuracy and are consistent with the correlations in Table 2. We introduce both measures of transparency in model 3 simultaneously. The coefficient of financial transparency is positive and significant as expected based on previous published literature. The focus of our study is governance transparency. Consistent with

¹⁶ *GOVTR* and *FINTR* are modestly negatively correlated (−0.159). In principle, financial information is an input into the governance system of a firm as well as the output of the governance system of a firm. A priori, it is not clear whether managers' disclosure of governance information increases or decreases with their financial disclosure. Although it is possible that firms that disclose more financial information disclose more governance information, it seems equally possible that managers disclose more governance information when financial disclosure level is low to make up for the low financial disclosure level. Therefore, whether *GOVTR* and *FINTR* are substitutes or complements remains an empirical issue.

Table 3
Tests of Hypothesis 1: The association between analyst forecast accuracy and corporate governance measures

Panel A: OLS models						
Independent variables	Predicted sign	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	?	−0.037 (−11.74)***	−0.030 (−18.09)***	−0.044 (−12.12)***	−0.087 (−11.20)***	−0.086 (−8.43)***
GOVTR	(+)	0.012 (5.49)***		0.014 (5.97)***	0.009 (4.65)***	0.009 (4.56)***
FINTR	(+)		0.013 (3.86)***	0.017 (4.82)***	0.008 (2.65)***	0.012 (3.69)***
ENF	(+)				0.001 (2.87)***	0.001 (3.56)***
SIZE	(+)				0.007 (7.47)***	0.006 (6.73)***
EVOL	(−)				−0.002 (−1.64)	−0.002 (−1.94)*
LOSS	(−)				−0.061 (−8.28)***	−0.062 (−8.52)***
Year controls						Included
Industry controls						Included
F-statistic		30.11***	14.92***	20.84***	28.44***	8.12***
Adjusted R ²		3.86%	1.51%	6.30%	35.92%	40.62%

Table 3 (continued)

Panel B: WLS models						
Independent variables	Predicted sign	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	?	−0.038 (−42.68)***	−0.031 (−59.94)***	−0.044 (−42.95)***	−0.092 (−43.44)***	−0.094 (−34.02)***
GOVTR		0.012 (18.15)***		0.012 (19.03)***	0.008 (14.44)***	0.008 (14.05)***
FINTR	(+)		0.015 (15.93)***	0.017 (17.59)***	0.006 (7.03)***	0.010 (12.10)***
ENF	(+)				0.001 (7.11)***	0.001 (10.77)***
Size	(+)				0.008 (30.26)***	0.007 (27.89)***
Evol	(−)				−0.002 (− 6.79)***	−0.002 (−8.28)***
Loss	(−)				−0.056 (−30.39)***	−0.056 (−31.85)***
Year controls						Included
Industry controls						Included
F-statistic		329.52***	253.71***	246.78***	407.58***	129.38***
Adjusted R ²		3.33%	1.56%	5.20%	35.18%	40.44%

The number of observations is 1100 for all regression models. OLS and WLS refer to ordinary least squares and (country) weighted least squares, respectively. The dependent variable is earnings forecast accuracy, measured as the negative of the absolute value of the difference between the Institutional Broker’s Estimate System consensus forecast available at the beginning of the fiscal year and the actual earnings per share for the year, scaled by stock price. *FINTR* and *GOVTR* are financial and governance transparency factor scores obtained from Bushman *et al.* (2004). *ENF* is a linear combination of the five enforcement variables in La Porta *et al.* (1997): efficiency of judicial system, rule of law, corruption, risk expropriation, and risk of contract repudiation. *SIZE* is the log of market value of equity at fiscal year end. *EVOL* is the standard deviation of earnings over the past 5 years. *LOSS* is a dummy variable that takes the value of 1 if the firm reported a loss, and 0 otherwise. The numbers in parentheses are the *t*-statistics. *** and ** denote significance at the 1 and 5 per cent levels, respectively. Standard errors are based on White (1980).

Hypothesis 1, governance transparency is positive and significant after controlling for financial transparency.¹⁷

Governance transparency remains significantly and positively correlated with *AFE* even after controlling for enforcement level, firm size, earnings volatility and loss-making firms. We introduce year and industry controls in our OLS model to ensure that our results represent our entire sample and that one specific industry or one particular year is not unduly influencing our results. Our results remain robust to the inclusion of year and industry controls. Our empirical analysis supports our hypothesis that governance transparency (measured at the country level) is associated with analyst forecast accuracy after controlling for financial transparency. We also use country-weighted least squares (WLS) analysis to ensure that any particular country in our sample does not drive our results (i.e. the numbers of observations per country are used as weights in the regressions).¹⁸ Results (Table 3, Panel B) remain robust to the WLS analysis.¹⁹

We test for multiple interaction effects by performing OLS and WLS regression analysis on financial transparency, governance transparency, enforcement measures and three two-way interactive variables. Results are presented in Table 4. The OLS analysis reveals that the main effect of *GOVTR* is positive after controlling for *FINTR* and *ENF*, but the interaction effect of *GOVTR* and

¹⁷ To compare the explanatory power of the financial transparency and governance transparency, we use a decomposition method derived theoretically by Theil (1971), and which is used by Collins *et al.* (1997). The incremental explanatory power of governance transparency is 3.6 per cent ($R^2_{\text{TOTAL}} - R^2_{\text{FINTR}}$), which exceeds the incremental explanatory power of financial transparency, which is 1.87 per cent ($R^2_{\text{TOTAL}} - R^2_{\text{GOVTR}}$). The incremental explanatory power common to both financial transparency and governance transparency is 0.31 per cent. Our results imply that governance transparency has greater incremental association with analyst forecast accuracy than financial transparency. This evidence is interesting not only for the academic literature, which has concentrated on the association between financial disclosures and analyst forecast accuracy in the past, but it provides some (indirect) empirical support for recently imposed governance regulations (although these are mandatory as opposed to the voluntary governance disclosures examined in this study).

¹⁸ WLS is an efficient method that makes good use of small datasets. If the standard deviation of the random errors in the data is not constant across all levels of the explanatory variables, using WLS with weights that are inversely proportional to the variance at each level of the explanatory variables yields the most precise parameter estimates possible. Source: *NIST/SEMATECH e-Handbook of Statistical Methods*, <http://www.itl.nist.gov/div898/handbook>.

¹⁹ As additional sensitivity analyses we: (i) perform Fama–MacBeth regressions where we average the coefficients from annual cross-sectional regressions and compute standard errors based on the time-series variation in the coefficients; and (ii) compute standard errors clustered by country. Although both approaches lead to lower significance levels than those reported in the present paper, results are consistent and significant at conventional levels (not tabulated for brevity). Finally, as a corollary to the WLS analysis, we have rerun the OLS tests excluding the country with the highest (lowest) number of observations. Results are consistent with those reported in the present paper.

Table 4

Test of Hypotheses 2 and 3: The interaction between governance transparency, financial transparency and legal enforcement

Independent variables	Predicted sign	OLS model	WLS model
Intercept	?	−0.086 (−8.45)***	−0.093 (−33.41)***
GOVTR	(+)	0.016 (4.36)***	0.014 (8.77)***
FINTR	(+)	0.010 (3.13)***	0.008 (7.86)***
ENF	(+)	0.002 (1.61)	0.002 (6.56)***
FINTR*GOVTR	(−)	−0.012 (−2.77)***	−0.013 (−8.05)***
GOVTR*ENF	(−)	−0.001 (−1.22)	−0.002 (−6.00)***
FINTR*ENF	(−)	−0.001 (−0.37)	−0.002 (−4.03)***
Firm-level control variables		Included	Included
Year and industry controls		Included	Included
F-statistic		7.81	125.67
Adjusted R ²		41.16%	41.16%

The number of observations is 1100 for all regression models. OLS and WLS refer to ordinary least squares and (country) weighted least squares, respectively. The dependent variable is earnings forecast accuracy, measured as the negative of the absolute value of the difference between the Institutional Broker's Estimate System consensus forecast available at the beginning of the fiscal year and the actual earnings per share for the year, scaled by stock price. *FINTR* and *GOVTR* are financial and governance transparency factor scores obtained from Bushman *et al.* (2004). *ENF* is a linear combination of the five enforcement variables in La Porta *et al.* (1997): efficiency of judicial system, rule of law, corruption, risk expropriation, and risk of contract repudiation. *SIZE* is the log of market value of equity at fiscal year end. *EVOL* is the standard deviation of earnings over the past 5 years. *LOSS* is a dummy variable that takes the value of 1 if the firm reported a loss, and 0 otherwise. The numbers in parentheses are the *t*-statistics. *** and ** denote significance at the 1 and 5 per cent levels, respectively. Standard errors are based on White (1980).

FINTR is negative and significant. The positive coefficients on the non-interaction variables (*GOVTR* and *FINTR*) suggest that there is a positive association between the variables *GOVTR* and analyst forecast accuracy, and between *FINTR* and analyst forecast accuracy.

The interaction variable *FINTR*GOVTR* is negative and significant, which hints at a possible substitution effect between the two individual variables. To be more precise, the coefficient for *GOVTR* suggests that a unit of *GOVTR* has a positive impact of 0.016 on analyst forecast accuracy when *FINTR* is low (as the interaction variables will be reduced to zero when *FINTR* is zero). The negative interaction coefficient (*GOVTR*FINTR*), along with the positive main effect

(*GOVTR*), suggests that although governance transparency might complement financial transparency by adding credibility and reducing uncertainty, governance transparency might also be a possible substitute to financial transparency in an environment of low disclosures. The coefficient of *ENF* and the interaction between *GOVTR* and *ENF* is not significant. We do not find evidence to support Hypothesis 3 that governance transparency assumes increased importance in an environment of weak legal enforcement.

We perform WLS analysis to ensure that any particular country in our sample does not drive our results. The WLS results are consistent with the OLS results. In particular, with WLS all the three main effects (*GOVTR*, *FINTR* and *ENF*) are positive and significant whereas all the three interaction terms are negative and significant. The WLS analysis provides empirical evidence to support Hypotheses 2 and 3 that *GOVTR* is significantly associated with analyst forecast accuracy when the financial transparency is low and legal enforcement level is weak.²⁰

5. Concluding remarks

Studies in the accounting literature have investigated effects of cross-country differences in accounting and disclosure. These issues are gathering further momentum as firms become more globalized and the world moves towards harmonizing accounting standards. Recent corporate scandals around the world have sparked heated debates among standard setters and active research on various aspects of corporate governance. As a part of such effort, the present study examines whether a sophisticated group of stock market participants, namely security analysts, use corporate governance-related disclosures in formulating earnings forecasts, and whether the accuracy of their forecasts increase with such disclosure.

Our results provide some new insight into the variation of analyst forecast accuracy across countries. Our study provides evidence that governance transparency (measured at the country level and based on Bushman *et al.* (2004)) has a positive impact on analyst forecast accuracy after controlling for financial transparency. Our results are robust to the inclusion of country- and firm-level control variables. Furthermore, we also provide preliminary evidence that governance transparency and financial transparency might be substitutes. We provide some evidence that

²⁰ To further alleviate the concern of sampling bias, we have re-estimated all models excluding the country with either the highest or the lowest number of observations. Results remain robust to this alternative specification (untabulated). We have also examined a group of country-level institutional variables. If our sampling is biased in the sense that our sample is heavily represented from particular institutions whose features we did not control for, such sampling bias might have affected our inference. On this note, we have investigated the possible unknown effects of: (i) country's legal regime; (ii) dominance of European countries in our sample (e.g. 13 out of 21 sample countries come from Europe); and (iii) level of economic development of firms' country of domicile (measured by gross national product) on our inference by including a dummy variable for each of these factors. Untabulated results are consistent with those reported in the paper.

governance transparency might be increasingly significant in an environment of weak legal enforcement. Our study extends the literature by providing initial evidence that governance-related disclosures are incrementally useful to financial disclosures in analysts' task of predicting future earnings.

In closing, our study is subject to the following limitations. First, our evidence does not enable us to tell whether it is the disclosure of governance mechanisms or the governance structure itself that is primarily driving the documented association.²¹ However, our basic premise is that unless disclosed, analysts might not be familiar with governance mechanisms and, as a consequence, they will be less likely to consider governance structure in formulating their forecasts. Second, future research might investigate how the information set analysts use to generate their forecasts varies according to corporate governance practices. Third, although our sample selection procedure (i.e. the use of non-US firms cross-listed in the USA) might enhance the internal validity of our tests, it could come at the expense of potentially limited external validity. However, as discussed above, by using ADR firms we reduce heterogeneity in our sample along important dimensions, such as GAAP differences, access to capital markets, how 'advanced' the firms are, and regulatory scrutiny, and alleviate concerns (common in international studies) related to heterogeneity in the sample in variables other than the test variables.

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²¹ In addition, as described above, our proxy for governance transparency is measured at the country level and not the firm level.

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