# Corporate Governance and Earnings Quality: International Evidence

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*We examine the relationship between corporate governance and earnings quality worldwide. Results suggest a substitute relationship between corporate governance and earnings quality. We find that the country effect is extremely relevant in shaping this relationship. Indeed, this relation is more pronounced in developed countries, in countries with strong investor protection. Our findings are consistent with the view that poor accounting information may force firms to adopt costlier corporate governance mechanisms, in particular in environments in which they are effective. Likewise, in such environments, firms with better quality accounting information may not need to invest so much in costly governance mechanisms.*

## INTRODUCTION

Financial scandals in the U.S. and Europe in the 2000s have raised concerns about the quality of accounting information and corporate governance practices worldwide. Investors and the financial community in general express concern about financial reporting, particularly the quality of reported earnings, the effectiveness of corporate governance systems, and auditors' independence and expertise. Regulatory bodies are calling for improved corporate governance and accounting quality and have enacted reforms in developed country financial reporting processes (e.g., the Sarbanes-Oxley Act 2002 and the Winter Report 2002). The corporate governance and earnings quality debate has extended as well to emerging countries, as weak corporate governance is often cited as one possible cause of the financial crises in emerging markets (e.g., Asian and Russian crises in the late 1990s).

The existence of a relationship between corporate governance and reported earnings has been broadly supported by the literature, both in theoretical and empirical studies. Yet, the relation between corporate governance and earnings quality is far from well understood. Most studies so far focus on U.S. data and international research is limited. It is not clear ex ante whether corporate governance and earnings quality are complementary mechanisms or substitute mechanisms. In the end, this is an empirical question.

On the one hand, accounting information plays an important role in the corporate governance process (e.g., Bushman and Smith 2001, 2003), and financial reporting and disclosure are seen as a significant component of corporate governance (e.g., La Porta, Lopes-de-Silanes, Shleifer, and Vishny, 1998). There is also evidence that corporate governance structures and practices are important to support the quality of reported earnings, in particular by reducing earnings management opportunistic behavior (e.g., Dechow,

Sloan, and Sweeney, 1996). As financial accounting is simultaneously an input and an output of corporate governance, higher quality of earnings may lead to a more effective governance mechanism, and a more effective mechanism may contribute to a higher quality of earnings. These arguments suggest complementarity between corporate governance and earnings quality.

On the other hand, limitations of poor accounting information, particularly reported earnings, could force costly information acquisition and monitoring mechanisms. Indeed, investors may demand stronger governance arrangements when firms' earnings are more opaque. The executive compensation literature, for example, indicates that firms shift toward the use of more costly performance measures when accounting information is of limited usefulness (e.g., Bushman, Indjejikian, and Smith, 1996). In this sense, corporate governance and earnings quality could be substitutes.

In this paper, we examine the relationship between corporate governance and earnings quality around the world. Our main contributions are to empirically assess whether corporate governance and earnings quality play a substitution or a complementarity role in an international sample, and also to assess to what extent this relation at firm level is shaped by the country environment to which a firm belongs.

We investigate whether corporate governance and earnings quality are complements or substitutes at the firm-level for an international sample of firms in both developed and emerging markets. Because corporate governance consists of a complex set of interrelated variables, we use a measure of corporate governance computed by the Standard and Poor's Transparency and Disclosure Ranking. As a robustness check we use another proxy for governance quality, the Corporate Governance Quotient created by Institutional Shareholder Services. To measure overall earnings quality, we construct an aggregate ranking based on a wide range of earnings attributes: accruals quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism. We estimate cross-sectional regressions of corporate governance ratings on earnings quality, controlling for firm-level variables and country-level variables that previous research has found to be related to corporate governance. We also include industry-fixed and country-fixed effects to control for industry and country unobserved heterogeneity.

Previous studies of U.S. companies show mixed results on the relation of corporate governance and earnings quality. Bushman, Chen, Engel, and Smith (2004) find evidence that strong governance systems (high ownership concentration, strong directors' and executives' equity-based incentives, and strong outside directors' reputations) are negatively related to earnings timeliness, suggesting a substitute relation. Others, however, find evidence of a complementarity relation between governance and earnings quality (García Lara, Osma, and Penalva, 2009; Larcker and Richardson, 2004; Bowen, Rajgopal and Venkatachalam, 2008). Yu (2006) finds that the relation between corporate governance and earnings management depends on the type of governance mechanism considered. He finds a positive relation between internal governance mechanisms (board structure and ownership concentration) and earnings management, but a negative relation between external governance mechanisms (anti-takeover provisions and institutional ownership) and earnings management. Also, Larcker, Richardson and Tuna (2007) find mixed evidence on the relation between governance and earnings attributes, such as smoothness, conservatism and value relevance, in U.S. firms.

International research has found significant differences in earnings attributes across countries (e.g., Ali and Hwang, 2000; Ball, Kothari, and Robin, 2000; Leuz, Nanda, and Wysocki, 2003; Francis and Wang, 2008). In addition, different governance mechanisms may be needed to maximize shareholder wealth in different countries, as the U.S. model of governance may not apply generally (Aggarwal, Erel, Stulz, and Williamson, 2006). Thus, the relation between corporate governance and earnings quality may differ across countries because of institutional, economic, and financial development differences. Bushman and Smith (2001) suggest that cross-country evidence is needed to better understand the interaction between accounting information and governance mechanisms. This is the gap we aim to cover.

Our main results suggest that corporate governance and earnings quality play substitute roles. In fact, we find a negative and significant relation between corporate governance ratings and earnings quality rankings. We interpret this negative relation as a result of firms finding it costly to invest in better governance mechanisms – therefore, firms with better earnings quality may not need to invest so much in costly governance mechanisms (and hence the substitution effect). Furthermore, we find that the country

environment is the major determinant of the firm-level corporate governance variation, which is consistent with research on the relative importance of firm and country characteristics in explaining corporate governance worldwide (Doidge, Karolyi, and Stulz, 2007).

We then investigate whether our main results hold in different environments. That is, we examine the role of economic development and the role of quality of legal institutions by splitting countries into high-low levels of economical development, and weak-strong levels of shareholder protection. Results suggest that the levels of development and shareholder protection play an important role in the relation between corporate governance and earnings quality. We find a negative relation between corporate governance ratings and earnings quality rankings in high economic development and strong investor protection countries, but no significant relation in low economic development and weak investor protection countries. This suggests that the substitution effect between earnings quality and corporate governance can only materialize in environments in which governance mechanisms are indeed effective.

We also study the role U.S. cross-listing plays in the relation between corporate governance and earnings quality. Several studies have identified cross-listing on a U.S. exchange as providing governance benefits and therefore increasing firms' valuation (e.g., Doidge, Karolyi, and Stulz, 2004). We split firms into two groups: global firms (those that are cross-listed on major U.S. stock exchanges), and non-global firms. Results are consistent with our expectation that the substitute relation between corporate governance and earnings quality is stronger for global firms than for non-global firms.

Overall, we find evidence of a substitute relation between corporate governance and earnings quality. Our results suggest that a low level of earnings quality makes corporate governance a more relevant mechanism to mitigate the agency costs between managers and shareholders. This substitute relation, however, does not hold generally across firms and countries. Rather, corporate governance can make up for poor earnings quality only when firms are located in developed countries and countries with strong legal institutions, or if the firm has voluntarily cross-listed in the U.S..

Our results are in line with research that treats governance structures as optimal contracting arrangements, which are endogenously determined by firm´s contracting and information environments (Linck, Netter, and Yang, 2008; Ferreira, Ferreira, and Raposo, 2011). In particular, Ferreira et al. (2011) using U.S. data show that stock price informativeness (viewed as a market monitoring mechanism) negatively impacts internal governance quality, suggesting a substitute relationship between information quality and governance quality. The explanation given in Ferreira et al. (2011) is that when one mechanism is effective, firms may not invest so much in another mechanism that is costly to implement. In this sense the same rationale applies to our findings.

In sum, our study provides new insights about the relation between corporate governance and earnings quality and makes several contributions to the corporate governance and accounting literatures. First, most research on the relation between corporate governance and earnings quality focuses on U.S. data. We use a large sample of firms in both developed and emerging markets, which allows for a better understanding of this relation. Second, most studies have examined the relation between one governance mechanism in isolation, or a subset of governance mechanisms and one single earnings attribute. Instead, we use corporate governance ratings and construct an earnings quality ranking, that is based on several earnings attributes, which gives an overall perspective of the relation between corporate governance systems and earnings quality at firm-level. Third, we find a negative relation, i.e. a substitution effect, between earnings quality and corporate governance. Moreover, we are able to identify this relation in some international environments, such as developed countries and countries with high standards of investor protection – we view these as environments in which earnings quality and corporate governance are effective, and in which firms may save on a costly governance mechanism if their earnings quality is already high. The remainder of the paper is organized as follows. Section 2 discusses the rationale for the association between corporate governance and earnings quality, summarizing the main arguments in favor of a substitution or complementarity effect. Section 3 describes the corporate governance and earnings quality measures used in our empirical setup. Section 4 describes the sample and control variables and provides descriptive statistics. Section 5 presents the empirical results. Section 6 provides robustness and additional results. Finally, Section 7 concludes.

## THE NATURE OF THE RELATION BETWEEN CORPORATE GOVERNANCE AND EARNINGS QUALITY

Due to the separation between ownership and managerial control (agency problem), conflicts of interest between managers and shareholders may arise, and managers may act to advance their own interests instead of shareholders' interests (Jensen and Meckling, 1976). Corporate governance arises as a device to safeguard the interest of shareholders by mitigating agency problems and by reducing the associated agency costs. Poorer operating performance and wealth transfers from shareholders to managers are examples of agency costs that may arise because of differing interests and asymmetric information between shareholders and managers.

The existence of a relationship between corporate governance and reported earnings has been broadly supported by the literature, both in theoretical and empirical studies. Yet, this relation is far from well understood. We can find arguments that point in opposite directions, either supporting the idea that there is complementarity between earnings quality and corporate governance, or suggesting that these two elements can perform substitute roles. We present a summary of such arguments below. We believe that, in the end, this is an empirical question, which we address in the remainder of this paper.

### Complementarity Between Corporate Governance and Earnings Quality

On the one hand, accounting information is an element of governance and in this sense we can find a positive relation, or complementarity, between the two, also because better governance mechanisms may lead to better quality of accounting numbers.

Bushman and Smith (2001) posit that financial accounting information affects economic performance and efficiency through at least three channels. First, financial accounting should provide useful information to managers and investors about investment opportunities directly as well as indirectly through its contribution to the determination of stock prices. Second, financial accounting information should reduce information asymmetry among investors. Third, financial accounting information should provide useful information as a direct input into corporate control mechanisms. While the first two channels emphasize the information role of financial accounting in valuation, the third channel focuses on the governance role of financial accounting information. "Corporate control mechanisms are the means by which managers are disciplined to act in the investor's interest" (Bushman and Smith, 2001, p. 238), and financial accounting may provide useful information in this process. In fact, financial reporting and disclosure are generally seen as important components of corporate governance, to the extent that accounting assists in monitoring firm performance and contractual commitments. Ball (2001), for example, argues that conservatism in financial statements enhances the effectiveness of corporate governance, executive compensation, and debt agreement in monitoring managers. Therefore, there is a demand for high-quality financial accounting information and disclosure to facilitate contracting and performance monitoring, thus reducing the expropriation of shareholder wealth. Moreover, high-quality financial reporting and disclosure also contributes to the reduction of information asymmetry between insiders and outsiders as well as among outsiders. Research on the governance role of accounting information considers that "financial accounting systems represent a primary source of effective, low-cost governance information" (Bushman and Smith, 2003, p. 71). In summary, "financial accounting is a key ingredient in the corporate governance process" (Sloan, 2001, p. 345), and prior research provides theoretical support for an association between corporate governance and financial accounting information through its governance role.[1]

Financial accounting information is also the primary source of verified information about managers' performance (Sloan, 2001), which means managers may have incentives to adjust accounting information, especially reported earnings, to suit their own ends and governance mechanisms are put in place to ensure that information is not thus manipulated. In this sense, financial accounting information is also a *product* of corporate governance – its quality may depend on the effectiveness of governance mechanisms. For example, audit committees normally are expected to play an important role in this regard; they oversee the financial reporting process and communicate with external auditors on behalf of investors. There is

the general belief that an effective corporate governance system produces high-quality financial accounting information and enhances investors' confidence in financial reporting. Indeed, regulatory bodies are calling for improved corporate governance over the financial reporting process. For example, the Sarbanes-Oxley Act in the U.S. posits that the interactions among the audit committee, the external auditor, the internal auditor, the board, and management are very important for the effectiveness of corporate governance mechanisms and to achieve high-quality financial reporting. In this regard, financial accounting information is not only an important input but also an output of the corporate governance process (Sloan, 2001), and corporate governance may play an important role in monitoring financial accounting information.

**Substitution Between Corporate Governance and Earnings Quality**

A more subtle argument can be put forward in favour of a negative relation between the quality of corporate governance and the quality of earnings. These two elements can play substitute roles when we recognize that adopting higher quality accounting practices and/or implementing more demanding corporate governance practices, is costly for firms. Given these costs, that have been recognized in the governance literature (see, for example, the discussion in Ferreira et al. (2011)), a firm with poor quality accounting information may have to shift towards more costly governance mechanisms. Likewise, a firm with high quality accounting earnings may not need to invest so much in costly corporate governance mechanisms.

We find different examples of this type of substitution effect in related literature. For example, Bushman et al. (1996) focusing on executive compensation find that firms shift toward the use of more costly performance measures when accounting information is of limited usefulness. In this sense, corporate governance and earnings quality could be viewed as substitutes. Another example is the substitution effect between the degree of independence of the board of directors (a corporate governance mechanism) and the stock price informativeness, found in Ferreira et al. (2011). These authors find that firms with more informative prices were able to invest less in costly corporate governance mechanisms.

Within the same line of reasoning, it is possible to find in equilibrium firms with higher quality earnings spending fewer resources in costly corporate governance mechanisms. Hence, there is the possibility of a substitution effect. Indeed, in our empirical setting we are able to test this relation and also to better interpret it by splitting our sample according to different environments to which firms may belong. The idea is that this substitution effect can only materialize in environments in which the governance and accounting mechanisms are effective. Therefore we will examine whether this substitution relation exists, in particular for firms in developed economies, for firms in countries with strong investor protection, and for firms that cross-list in the U.S..

## FIRM-LEVEL CORPORATE GOVERNANCE QUALITY AND EARNINGS QUALITY MEASURES

**Corporate Governance Measures**

Corporate governance consists of a complex set of interrelated internal and external mechanisms. Thus, rather than a single or a limited set of governance characteristics, we use as a measure of corporate governance quality the governance ratings computed by the Standard and Poor's (S&P) Transparency and Disclosure Ranking. For robustness checks we use another proxy of governance quality, the Corporate Governance Quotient (CGQ) provided by Institutional Shareholder Services (ISS).[2]

S&P examines annual reports for the inclusion or omission of 98 disclosure items covering three broad categories: (a) ownership structure and investor relations (28 items); (b) financial transparency and information disclosure (35 items); and (c) board and management structure and processes (35 items). According to S&P, the 98 items are chosen because of their relevance in the analysis of corporate governance from the perspective of financial stakeholders.

Each item is scored on a binary basis. Categories scores and an overall score result from the sum of individual scores.[3] We express S&P ratings as a percentage; a value of 70 indicates 70% of the 98 items

are included in a firm's annual reports. A higher score means a firm discloses more, and we interpret this as indicative of better governance practices. S&P covers firms in both developed markets (Europe, developed Asia, and the U.S.) and emerging markets (Asia, Latin America, Central and Eastern Europe, and Africa).

Although some argue that the S&P ratings are a measure of transparency and disclosure more than a comprehensive measure of corporate governance (e.g., Durnev and Kim, 2005), we trust that the level of transparency and disclosure is a reliable indicator of corporate governance quality. Financial reporting and disclosure are important means for managers to communicate governance to outsiders (Healy and Papelu, 2001). In fact, transparency and disclosure practices have been a key point in the recent governance reform debate worldwide, and strong transparency and disclosure standards are usually seen as important indicators of strong corporate governance. For example, the Organization for Economic Cooperation and Development Corporate Governance Guidelines (2004) emphasizes the importance of transparency as a critical component of corporate governance.

For robustness checks, as an alternative proxy for corporate governance we use the CGQ provided by ISS in sensitivity analysis. ISS analyzes firms' annual reports, regulatory filings, and websites to compile 55 governance attributes in 8 categories: board (17 attributes); audit (4 attributes); charter/by-laws (12 attributes); anti-takeover provisions (1 attribute); executive and director compensation (10 attributes); qualitative factors (6 attributes); ownership (4 attributes); and director education (1 attribute). ISS sets for each attribute a minimally acceptable level, and evaluates whether a firm meets this criterion. The CGQ is a relative measure of a firm's governance quality. It indicates the quality of a firm's governance compared to firms in the same industry or in the same index. ISS covers 22 developed countries and firms in indexes, as follows: MSCI EAFE index; FTSE All Share index; FTSE All World Developed index; and S&P/TSX index.

A potential limitation of the use of commercial governance ratings is the sample selection problem – how countries and firms within countries are selected by the providers – because this may lead to unknown biases in the study design. We attempt to mitigate potential bias problems in several ways. First, we control for country and industry heterogeneity by using dummy variables. Second, we control for size by using firm size as a control variable. Finally, we test the sensitivity of our results by excluding the two most representative countries in the sample.

**Earnings Quality Measures**

Prior studies have examined earnings quality using either a single attribute of earnings or a subset of earnings attributes. In a recent survey on earnings quality, Dechow, Ge and Schrand (2010) argue that there is no superior measure of earnings quality and that alternative measures cannot be treated as substitutes. Moreover, because of the difficulty in measuring earnings quality and to minimize the potential effects of omitted variables, we use several measures and compute an aggregate ranking to study the relation between corporate governance and earnings quality.

We use seven earnings attributes that have been identified as related to earnings quality: accruals quality (*AQ*), persistence (*PERS*), predictability (*PRED*), and smoothness (*SMOOTH*), value relevance (*RELEV*), timeliness (*TIMEL*), and conservatism (*CONSERV*) as in Francis, LaFond, Olsson, and Schipper (2004). Firm-level earnings quality measures are estimated for the entire sample period (1990-2003) for each firm. Details on earnings quality measures computation are available in Gaio (2010) and Gaio and Raposo (2011). We also provide an appendix in the end with a summary of these inputs to our Earnings Quality measure. We compute an aggregate earnings quality measure (*EQ*). We rank firms on a scale from zero to 100, according to each of the seven individual measures (higher rankings are associated with higher levels of earnings quality). The aggregate earnings quality is calculated by averaging the rankings for the seven individual measures for each firm.

## SAMPLE AND DATA

### Sample and Descriptive Statistics

The S&P ratings are observed in 2003, which is the year for which S&P computed this measure. Earnings quality measures are computed using accounting and financial data from the Worldscope database for the 1990-2003 period. Our sample begins with all non-financial firms (financial firms SIC 6000-6999 are excluded) for which S&P ratings are available. Financial firms are excluded to increase the homogeneity of the sample and the comparability of the results across firms. Each firm must have financial statements information available for at least seven consecutive years. We compute individual and aggregate earnings quality measures over the whole sample period (1990-2003), as described in the appendix. We use a long period to estimate the earnings quality measures in order to minimize estimation error. To eliminate outliers, we winsorize individual earnings quality measures at the 1st and 99th percentiles.

The final sample consists of 537 firms in 35 countries (21 developed and 14 emerging markets).[4] Firms in emerging countries and firms cross-listed on major U.S. stock exchanges, represent 34.5% and 28.5% of the total sample, respectively. About 56.8% of the firms belong to Manufacturing (SIC codes 2 and 3), 18.8% to Transportation, Communications, and Utilities (SIC code 4) and 10.8% to Wholesale and Retail Trade (SIC code 5).

Panel A of Table 1 shows summary statistics for the S&P ratings and *EQ* rankings. A higher S&P rating indicates better governance practices. The S&P rating mean (median) is 52.50 (53.76). There is substantial variation in ratings across firms. The highest-rated firm has a score of 85.11 and the lowest-rated has a score of 5.21. The standard deviation is 15.8.

The *EQ* ranking mean (median) is 50.63 (50.64). There is also significant variation in earnings quality across firms. The highest-rated firm has a score of 81.20 and the lowest-rated has a score of 5.21. The standard deviation is 12.20.

## TABLE 1
## DESCRIPTIVE STATISTICS OF CORPORATE GOVERNANCE RATINGS AND EARNINGS QUALITY RANKINGS

This table presents descriptive statistics of S&P ratings and EQ rankings and correlations among individual earnings quality measures. Panel A presents the number of observations (N), and the mean, median, standard deviation (Std Dev), minimum (Min) and maximum (Max) of S&P ratings and EQ rankings. Panel B presents Pearson correlations among earnings quality measures. Accruals Quality (AQ) is the standard deviation of the residuals from a regression of working capital accruals on prior, current and future cash flow from operation. Earnings Persistence (PERS) is the negative of the slope coefficient from an AR1 model of annual NIBE. Earnings Predictability (PRED) is the square root of the error variance from the AR1 model. Earnings Smoothness (SMOOTH) is the ratio of standard deviation of NIBE (scaled by assets) to the standard deviation of cash flows from operations (scaled by assets). Value Relevance (RELEV) is the negative of the adjusted $R^2$ from a regression of 15-month returns on the level and change in annual NIBE. Earnings Timeliness (TIMEL) is the negative of the adjusted $R^2$ from a reverse regression of annual NIBE on variables capturing positive and negative 15-months return. Earnings Conservatism (CONSER) is the negative of the ratio of the coefficient on negative returns to positive returns in the reverse regression of annual NIBE on variables capturing positive and negative 15-months return. Earnings quality measures are computed using data from Worldscope database. The sample period is from 1990 to 2003. Boldface denotes significance at the 5% level.

**Panel A: Descriptive Statistics**

| | N | Mean | Median | Std Dev | Min | Max |
|---|---|---|---|---|---|---|
| S&P | 537 | 52.50 | 53.76 | 15.80 | 5.21 | 85.11 |
| EQ | 537 | 50.63 | 50.64 | 12.20 | 14.72 | 81.20 |

**Panel B: Pearson Correlations**

| | AQ | PERS | PRED | SMOOTH | RELEV | TIMEL | CONSER |
|---|---|---|---|---|---|---|---|
| AQ | 1.000 | | | | | | |
| PERS | 0.003 | 1.000 | | | | | |
| PRED | **0.338** | 0.007 | 1.000 | | | | |
| SMOOTH | **0.337** | **-0.078** | **0.180** | 1.000 | | | |
| RELEV | **0.059** | -0.013 | -0.022 | **0.028** | 1.000 | | |
| TIMEL | **0.046** | 0.010 | 0.004 | 0.003 | **0.573** | 1.000 | |
| CONSER | 0.012 | 0.011 | -0.009 | -0.008 | 0.015 | **0.023** | 1.000 |

### Firm-Level Characteristics

To examine the relation between corporate governance and earnings quality at the firm-level, we need to control for firm characteristics that previous research has identified as governance determinants. We consider eight firm-level variables that are common in the disclosure and governance literatures (e.g., Doidge et al., 2007; Durnev and Kim, 2005; Francis, Khuarana, and Pereira, 2005): investment opportunities, external finance dependence, insider ownership, firm size, cash holdings, book-to-market equity ratio, leverage, and past performance. We take averages across the whole sample period (1990-2003) for each firm-level control variable consistent with our estimation of earnings quality measures.

Differences in corporate governance practices could arise because of differences in growth opportunities. Firms with good growth opportunities may need external capital to finance investments. Greater need for external financing creates incentives to improve corporate governance practices in order to benefit from a lower cost of capital. We use two variables to capture the growth opportunities effect: *INVOP* as a direct proxy for investment opportunities, and *EXTFIN* as a proxy for dependence on external financing. Consistent with the arguments above and prior evidence (e.g., Durnev and Kim, 2005; Francis et al., 2005), we expect both variables, to be positively related to our corporate governance ratings.

Differences in corporate governance practices may also arise from differences in insider ownership concentration. Warfield, Wild, and Wild (1995), for example, document that an increase in managerial ownership would reduce the principal-agent problem between managers and shareholders. Indeed, greater insider ownership may lead to greater convergence of interests between insider and outsider shareholders, and thus reduce agency costs. However, greater insider ownership may also result in more management

entrenchment, and thus increase agency costs. Therefore, we do not have a clear prediction for the coefficient sign of insider ownership (*CLOSE*).

We also predict that differences in firm size may lead to differences in corporate governance practices. Larger firms are more complex and more prone to agency conflicts than smaller firms (e.g., Jensen and Meckling, 1976), and so, they may need to adopt more restrictive governance practices. At the same time, larger firms are more exposed and may face greater transparency costs. Smaller firms may also have greater growth opportunities, and so, consistent with our arguments above, greater incentives to improve governance quality. Despite these arguments, we expect to find a positive relation between firm size (*SIZE*) and corporate governance ratings.

The level of cash holdings may also lead to differences in governance practices. A higher level of cash holdings implies less of a need for external financing and so reduced incentives to improve governance practices. A higher level of cash holdings, however, may be the result of recent access to capital markets, and so be related to better governance practices (Doidge et al., 2007). In addition, a cash-rich firm may face free-cash-flow problems (Jensen, 1986) and a higher demand for strict governance practices, because their shareholders have a greater need to protect against expropriation of their resources. In this case we would expect a positive relation between cash holdings (*CASH*) and corporate governance ratings.

Finally, we control for the influence of the book-to-market equity value (*BM*), financial leverage (*LEV*), and return on assets (*ROA*). BM is usually lower for firms with good growth opportunities, so it is usually considered an inverse proxy for growth opportunities. Therefore, consistent with our previous predictions, we expect to find a negative relation between BM and corporate governance ratings. Financial leverage can be seen as a proxy for the likelihood of financial distress. Thus, highly levered firms are associated with high risk and are less attractive from an investment perspective. Agency theory suggests that the greater the financial leverage, the higher the agency costs (e.g., Jensen and Meckling, 1976), so there is a demand for well-developed governance practices. In this sense, the coefficient on *LEV* is expected to be positive. Evidence in the disclosure literature, however, is mixed and so we do not have a clear prediction for the coefficient sign of *LEV*. Prior research has documented an association between corporate governance and firm performance (e.g. Klapper and Love, 2004). We use *ROA* to control for the impact of firm performance and expect to find a positive relation between *ROA* and corporate governance ratings.[5]

Panel A of Table 2 presents descriptive statistics for firm-level variables. The median firm has total assets of 4 billion U.S. dollars, annual sales growth of 4%, leverage ratio of 27%, return on assets of 6%, and 33% of its shares are closely held. Panel B of Table 2 shows Pearson correlations among firm-level variables. The absolute values range from 0.003 to 0.501. Overall, the correlations values are low, which suggests that our firm-level variables capture different aspects of firm characteristics and there should be no multicollinearity concerns. This suggests that earnings quality is a distinct firm characteristic and not directly determined by the other firm characteristics used as determinants of firm-level corporate governance.

## TABLE 2
## DESCRIPTIVE STATISTICS AND CORRELATION MATRIX OD FIRM-LEVEL CONTROL VARIABLES

This table presents descriptive statistic and correlations among firm-level control variables. Firm-level variables are averages over the whole sample period and are computed using data from Worldscope database. The sample period is from 1990 to 2003. Panel A reports summary information on distributions of firm-level control variables. INVOP is investment opportunities given by annual sales growth. EXTFIN is external finance dependence computes as capital expenditures minus cash flow from operations divided by capital expenditures. CLOSE is insider ownership measured as percentage of shares held by insiders. SIZE is log of total assets. CASH is cash holdings as a percentage of total assets. BM is the log of book-to-market equity ratio. LEV is leverage measured as the ratio of long-term debt to total assets. ROA is return on assets computed as the ratio of net operating profits and losses after taxes to total assets. Panel B reports Pearson correlations among firm-level control variables. Boldface denotes significance at the 5% level.

**Panel A: Descriptive Statistics**

| | N | Mean | Median | Std Dev | Min | Max |
|---|---|---|---|---|---|---|
| INVOP | 537 | 0.051 | 0.042 | 0.049 | -0.060 | 0.322 |
| EXTFIN | 537 | 0.499 | 0.146 | 1.133 | -1.557 | 15.230 |
| CLOSE | 537 | 0.350 | 0.327 | 0.210 | 0.001 | 0.964 |
| SIZE | 537 | 15.129 | 15.214 | 1.469 | 10.775 | 18.607 |
| CASH | 537 | 0.126 | 0.102 | 0.092 | 0.003 | 0.526 |
| BM | 537 | -0.753 | -0.715 | 0.587 | -2.673 | 1.272 |
| LEV | 537 | 0.277 | 0.273 | 0.141 | 0.000 | 0.696 |
| ROA | 537 | 0.070 | 0.060 | 0.054 | -0.097 | 0.382 |

**Panel B: Pearson Correlations**

| | INVOP | EXTFIN | CLOSE | SIZE | CASH | BM | LEV | ROA |
|---|---|---|---|---|---|---|---|---|
| INVOP | 1.000 | | | | | | | |
| EXTFIN | 0.069 | 1.000 | | | | | | |
| CLOSE | 0.073 | 0.041 | 1.000 | | | | | |
| SIZE | **-0.394** | -0.069 | **-0.135** | 1.000 | | | | |
| CASH | 0.056 | 0.055 | -0.016 | **-0.145** | 1.000 | | | |
| BM | **-0.233** | -0.053 | **0.119** | **0.247** | **-0.274** | 1.000 | | |
| LEV | **-0.089** | -0.084 | -0.003 | **0.224** | **-0.377** | **0.244** | 1.000 | |
| ROA | **0.443** | 0.035 | 0.028 | **-0.421** | **0.237** | **-0.501** | **-0.373** | 1.000 |

### Country-Level Characteristics

We use three country-level characteristics that prior studies have found to be related to firm-level corporate governance (e.g. Doidge et al., 2007): the quality of legal institutions, the level of economic development, and the level of financial development. We expected both the S&P and ISS ratings to be positively related to these country variables, as we believe that a low level of investor protection as well as low levels of economic and financial development gives firms little motivation to improve corporate governance.

Mechanisms to improve corporate governance quality may not exist or may be too costly in less developed countries with weak investor protection environments, because of the absence of infrastructure. As La Porta et al. (1998) argue, in countries where laws offer weak shareholder protection, it might be costly to adopt any different provisions at the corporate level, as investors and the courts might not understand such nonstandard contracts.

Poor financial development could also limit the benefits of improving the quality of corporate governance. In fact, one of the incentives, probably the most beneficial, of high-quality corporate governance, is to access the capital markets on better terms (at a lower cost of capital). Also, as Doidge et al. (2007) argue, good governance is more expensive to implement in countries with less-developed capital markets.

We measure the quality of legal institutions (*LEGAL*) as the product of "anti-director rights" and the "rule of law" (Doidge et al., 2007; Durnev and Kim, 2005). The level of economic development (*GDP*)

and the level of financial development (*MCAP*) are averages across the whole sample period and are computed using data from the World Development Indicators (WDI) database.

## EMPIRICAL RESULTS

### Relation Between Corporate Governance and Earnings Quality

We expect to find a significant association between corporate governance ratings (*S&P*) and earnings quality rankings (*EQ*) as discussed in Section 2. If there is a positive relation between corporate governance ratings and earnings quality rankings, corporate governance quality and earnings quality are mostly complementary mechanisms. If, on the contrary, there is a negative relation, then corporate governance quality and earnings quality are substitute mechanisms in our sample.

We estimate the firm-level corporate governance cross-sectional regression:

$$CG_i = b_0 + b_1 EQ_i + b_2 INVOP_i + b_3 EXTFIN_i + b_4 CLOSE_i + b_5 SIZE_i + b_6 CASH_i + \\ + b_7 BM_i + b_8 LEV_i + b_9 ROA_i + c_1 LEGAL_j + c_2 GDP_j + c_3 MCAP_j + \varepsilon_i \quad (1)$$

where $CG_i$ is the corporate governance rating of firm i, and $EQ_i$ is the aggregate earnings quality ranking of firm i. The firm-level and country-level control variables are as described before. The additional controls are alternate country and industry fixed-effects (two-digit SIC). We control for industry characteristics because differences in asset structure, accounting practices, regulation, and competitiveness across industries may also affect corporate governance (Durnev and Kim, 2005). By controlling for country and industry fixed-effects, we expect to mitigate the omitted variables bias.

Table 3 reports the estimates of the corporate governance cross-sectional regression in equation (1). We use alternative specifications to test the association between corporate governance ratings and the earnings quality rankings. In column (1), we consider only firm-level variables; in column (2) we add country-level variables; in column (3) instead of country-level variables we consider country-fixed effects to maximize the potential explanatory power of country characteristics; and finally in column (4) we add industry-fixed effects to the specification in column (3), to control for industry heterogeneity across firms. The focus explanatory variable is *EQ*.

The *EQ* coefficient is negative and significant in all specifications, which suggests a negative relation between the *S&P* ratings and earnings quality rankings, and thus that governance and earnings quality play substitute roles.

Results in column (1) show that earnings quality and firm-level control variables explain 28.2% of the variation in corporate governance ratings. S&P ratings are positively related to *SIZE* but negatively related to *CLOSE* and *BM*. These results suggest that larger firms, dispersed ownership firms, and growth firms tend to have better corporate governance. We find no association between *S&P* ratings and the other firm characteristics. *EQ* is the only firm-level variable that is systematically significant across all specifications of the model.

Results in column (2) show that *S&P* ratings are positively related to *GDP* and *LEGAL*, suggesting that firms in more highly developed countries and firms in higher investor protection countries have better corporate governance. We find no association between *S&P* ratings and *MCAP*. Country-level variables, added to *EQ* and firm-level control variables, explain about 36.4% of the variation in *S&P* ratings.

## TABLE 3
## CORPORATE GOVERNANCE AND EARNINGS QUALITY

EQ is earnings quality ranking calculated as the average rank across the seven individual measures. INVOP is investment opportunities given by annual sales growth. EXTFIN is external finance dependence computes as capital expenditures minus cash flow from operations divided by capital expenditures. CLOSE is insider ownership measured as percentage of shares held by insiders. SIZE is log of total assets. CASH is cash holdings as a percentage of total assets. BM is the log of book-to-market equity ratio. LEV is leverage measured as the ratio of long-term debt to total assets. ROA is return on assets computed as the ratio of net operating profits and losses after taxes to total assets. Country-level explanatory variables are: LEGAL, the product of "anti-director rights" and "rule of law" measures; GDP, the log of gross domestic product per capita; and MCAP, the stock market capitalization divided by gross domestic product. Firm-level and country-level variables are averages over the whole sample period. The sample period is from 1990 to 2003 for the calculation of the earnings quality components of the EQ measure. Regressions include alternatively country fixed-effects and industry fixed-effects (two-digit SIC). Robust *t*-statistics are in parentheses. Boldface denotes significance at the 5% level.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| EQ | **-0.1464** | **-0.1666** | **-0.0782** | **-0.0822** |
| | (-2.89) | (-3.46) | (-2.30) | (-2.34) |
| INVOP | -34.0491 | -23.4151 | 10.5583 | 11.8782 |
| | (-1.86) | (-1.34) | (1.11) | (1.22) |
| EXTFIN | 0.1406 | -0.1158 | -0.0216 | 0.0134 |
| | (0.21) | (-0.19) | (-0.04) | (0.03) |
| CLOSE | **-14.7786** | -4.3295 | 1.1475 | 1.6738 |
| | (-4.55) | (-1.30) | (0.43) | (0.62) |
| SIZE | **3.7336** | **2.7147** | **2.1266** | **2.2620** |
| | (7.82) | (4.96) | (5.27) | (5.63) |
| CASH | -1.4505 | -11.0383 | 5.9628 | 5.8879 |
| | (-0.21) | (-1.65) | (1.27) | (1.23) |
| BM | **-9.2593** | **-6.3478** | -0.8918 | -0.7911 |
| | (-7.76) | (-5.11) | (-0.97) | (-0.85) |
| LEV | -7.9112 | -3.3346 | 4.9847 | 4.8049 |
| | (-1.78) | (-0.78) | (1.74) | (1.70) |
| ROA | -21.9728 | 10.2376 | 20.2594 | 21.3239 |
| | (-1.30) | (0.60) | (1.55) | (1.61) |
| LEGAL | | **0.3609** | | |
| | | (5.61) | | |
| GDP | | **2.0943** | | |
| | | (2.73) | | |
| MCAP | | -0.1493 | | |
| | | (-0.13) | | |
| Constant | 7.2000 | -10.4676 | | |
| | (0.88) | (-1.30) | | |
| Country dummies | No | No | Yes | Yes |
| Industry dummies | No | No | No | Yes |
| Adjusted R-square | 0.282 | 0.364 | 0.768 | 0.767 |
| N | 537 | 537 | 537 | 537 |

When we control for unobserved country heterogeneity using country fixed effects (column (3)), the adjusted $R^2$ increases significantly, from 36.4% to 76.8%, which suggests that our country-level variables reflect only a portion of the potential impact of country environment on *S&P* rating variation. This finding indicates that country characteristics have incremental explanatory power over firm characteristics in explaining corporate governance ratings, which is consistent with findings in Doidge et al. (2007).

Finally, the adjusted $R^2$ is similar in column (3) and column (4), which suggests that the impact of industry heterogeneity in explaining *S&P* rating variation is captured in previous specifications. The EQ coefficient remains negative and significant even after controlling for unobserved country and industry heterogeneity, indicating a strong negative relation between S&P ratings and earnings quality rankings.

In summary, our main findings are: (1) corporate governance ratings are negatively related to earnings quality rankings, controlling for other firm characteristics that have been found to be determinants of corporate governance structure and practices; (2) the relation between corporate governance ratings and earnings quality rankings remains negative and significant even after controlling for all unobserved industry and country heterogeneity; and (3) country characteristics have strong incremental explanatory power over firm characteristics in explaining variations in corporate governance ratings.

Our main finding of a substitute role between corporate governance and earnings quality suggests that strong corporate governance standards can make up for poor earnings quality. This is consistent with research that suggests limitations of accounting information are associated with a greater demand for firm-specific information and costly information acquisition and monitoring mechanisms (e.g. La Porta et al., 1998; Bushman et al., 2004).[6] Firms with poor earnings quality will use more sophisticated and expensive governance mechanisms because information asymmetry is higher. In contrast, firms with good earnings quality will use less sophisticated governance mechanisms because information asymmetry is lower, and there is less need for additional costly governance mechanisms.

**Explaining the Relation Between Corporate Governance and Earnings Quality: The Role of Economic Development**

We now analyze the role of economic development in shaping the relation between corporate governance and earnings quality. We expect the substitute role between corporate governance and earnings quality to be more pronounced in countries with higher economic development, where the quality of legal institutions and the overall environment for making business is sounder. These strong country level mechanisms can be "sufficient" for a firm with high earnings quality. In contrast, in the absence of these country mechanisms, a firm with high earnings quality may still require sophisticated governance mechanisms.

To investigate the role of economic development in the relation of corporate governance and earnings quality we split the sample into two groups of countries, high and low economic development, based on the median *GDP*, and run the firm-level corporate governance cross-sectional regression equation separately for each sample. Panel A of Table 4 reports the results. For brevity, we report results only for specification (4) of the model.

For firms in high economic development countries, the *EQ* coefficient is negative and significant in all specifications of the model, which suggests a negative relation between corporate governance ratings and earnings quality rankings in highly developed countries. This suggests that the substitution effect between the two mechanisms is at work in environments in which these mechanisms are effective.

Firm-level variables explain 18.7% of *S&P* ratings variation. When we fully consider country and industry characteristics through fixed-effects the adjusted $R^2$ increases to 46.3%. However, results for firms in low economic development countries suggest that there is no relation between S&P ratings and *EQ* rankings. In fact, *EQ* coefficient is negative but insignificant in all specifications. It seems that strong corporate governance standards cannot make up for poor earnings quality in less developed countries.

Firm-level variables explain 29.7% of *S&P* ratings variation in less developed countries. When we control for country and industry heterogeneity, the adjusted $R^2$ increases to 80.2%. Country characteristics have much more incremental explanatory power over firm characteristics in less developed countries than in more developed countries. This finding is consistent with the evidence in Doidge et al. (2007). It seems that the country environment is more important in explaining firm-level corporate governance in less developed countries, and thus firms have to work harder to offset a less developed environment.

## TABLE 4
## CORPORATE GOVERNANCE AND EARNINGS QUALITY: ROLE OF ECONOMIC DEVELOPMENT, INVESTOR PROTECTION AND U.S. CROSS-LISTING

Panel A shows the results for firms in high and low economic development countries. Countries are in the high (low) economic development group if GDP is above (below) the median. Panel B shows the results for firms in high and low investor protection countries. Countries are in the high (low) investor protection group if LEGAL is above (below) the median. Panel C shows the results for global and non-global firms. Firms are considered as global firms if they cross-list on a major U.S. stock market, and non-global otherwise. Firm-level variables are defined as before. The sample period is from 1990 to 2003 for the calculation of the earnings quality components of the EQ measure. Regressions include country fixed-effects and industry fixed-effects (two-digit SIC). Robust *t*-statistics are in parentheses. Boldface denotes significance at the 5% level.

| | **Panel A** | | **Panel B** | | **Panel C** | |
|---|---|---|---|---|---|---|
| | **Economic Development** | | **Investor protection** | | **U.S. Cross-Listing** | |
| | High | Low | High | Low | Global | Non-Global |
| EQ | **-0.1261** | -0.0428 | **-0.0591** | -0.1095 | **-0.1090** | -0.0418 |
| | (-3.12) | (-0.77) | (-2.12) | (-1.90) | (-2.12) | (-1.03) |
| INVOP | **44.3385** | 9.1895 | 11.2744 | 4.8776 | 11.6911 | -1.8134 |
| | (2.48) | (0.77) | (1.11) | (0.32) | (1.11) | (-0.15) |
| EXTFIN | 1.1581 | -0.2386 | -0.2521 | 1.2921 | 0.9719 | -0.5344 |
| | (1.54) | (-0.44) | (-0.61) | (1.39) | (-0.61) | (-1.28) |
| CLOSE | -1.7755 | 3.5239 | 3.2397 | -0.3740 | -2.1913 | 2.6536 |
| | (-0.48) | (0.95) | (0.99) | (-0.10) | (0.99) | (0.90) |
| SIZE | **2.4958** | **2.0837** | **2.4576** | **2.0636** | **1.4752** | 0.7443 |
| | (4.27) | (3.80) | (6.01) | (3.06) | (6.01) | (1.56) |
| CASH | -10.0014 | **15.5385** | 9.5318 | 1.0270 | 3.2025 | -1.7536 |
| | (-1.41) | (2.36) | (1.88) | (0.13) | (1.88) | (-0.35) |
| BM | 1.4382 | -1.4262 | **-2.7078** | 0.4251 | **-1.0985** | 0.9899 |
| | (0.98) | (-1.18) | (-3.01) | (0.26) | (-3.01) | (0.84) |
| LEV | -1.2433 | **10.8164** | 1.3442 | 8.8026 | 8.6484 | 3.5246 |
| | (-0.35) | (2.29) | (0.47) | (1.60) | (0.47) | (1.27) |
| ROA | 43.9537 | 15.0524 | -21.8352 | **50.8049** | 47.5191 | 27.8926 |
| | (1.31) | (1.07) | (-1.55) | (2.59) | (-1.55) | (1.72) |
| Adjusted R-square | 0.463 | 0.802 | 0.752 | 0.697 | 0.851 | 0.778 |
| N | 253 | 284 | 272 | 265 | 148 | 389 |

To summarize, results in Panel A of Table 4 show a strong negative relation between corporate governance and earnings quality in developed countries, suggesting they play substitute roles. However, there is no evidence of a significant relation between corporate governance and earnings quality in less developed countries. We conclude therefore that economic development plays an important role in determining the relation between corporate governance quality and earnings quality around the world.

### Explaining the Relation Between Corporate Governance and Earnings Quality: The Role of Investor Protection

We further explore the relation between corporate governance and earnings quality by studying the role of investor protection. We expect the substitution effect between corporate governance and earnings quality to be more pronounced in countries with stronger investor protection. Firms with high earnings quality may not need to invest as much in firm-level governance mechanisms in a country with strong investor protection, while this may not be the case in the absence of these country-level mechanisms. This follows because in low investor protection environments the earnings quality mechanism may not be so effective anyway, in which case we would not be able to identify a substitution effect between earnings quality and corporate governance.

We split the sample into two groups of countries, high and low investor protection, using the country variable *LEGAL*. Countries are classified as offering high investor protection if they have a *LEGAL* index above the median and low investor protection if they have a *LEGAL* index below the median. We then run the firm-level corporate governance cross-sectional regression equation separately for each sample. Panel B of Table 4 presents the results.

Results for firms in high investor protection countries show that *EQ* coefficient is negative and significant in all specifications, suggesting a negative relation between corporate governance ratings and earnings quality rankings in these countries in which investors' interests are well taken care of. Firm-level variables explain 38.4% of *S&P* ratings variation in high investor protection countries. When we fully control for country and industry characteristics through fixed-effects, the adjusted $R^2$ increases to 75.2%. For firms in low investor protection countries, the *EQ* coefficient is negative but insignificant in all specifications. Therefore, there is no evidence of a reliable relation between corporate governance quality and earnings quality in countries with a weak legal institutional setting.

Firm characteristics explain 22.8% of the *S&P* ratings variation in low investor protection countries. When we fully consider country and industry heterogeneity, the adjusted $R^2$ increases considerably to almost 70%, or over three times. Country characteristics have higher incremental power in explaining *S&P* ratings variation in low investor protection countries than in high investor protection countries. Country environment seems to explain governance ratings variations better in low investor protection than in high investor protection countries. We conclude that country-level investor protection plays an important role in determining the relation of corporate governance and earnings quality around the world. Indeed, there is evidence of a strong negative relation between *S&P* ratings and earnings quality rankings in high investor protection countries, but no evidence of such a relation in low investor protection countries. These results suggest that corporate governance and earnings quality are substitutes, but that this trade-off occurs only when the legal institutional setup is of good quality.

**Explaining the Relation Between Corporate Governance and Earnings Quality: The Role of U.S. Cross-Listing**

Several studies have identified cross-listing on a U.S. exchange as having unique governance and bonding benefits (e.g. Doidge et al., 2004). Does cross-listing on a U.S. exchange play a role in the relation between corporate governance and earnings quality?

Firms with access to foreign capital markets and financial institutions are less dependent on their home country institutional environment, and so have a chance to overcome poorer country environment. When a firm decides to cross-list on a U.S. exchange, it is committing to U.S. rules and may benefit from a better macro-environment. These firms also have to meet more stringent disclosure and investor protection requirements, and are under greater pressure to improve governance quality. Thus, we would expect to find the substitute relation between corporate governance and earnings quality to be stronger in cross-listed firms than in non-cross-listed firms.

To study the role of cross-listing in the relation between corporate governance and earnings quality, we split the sample into two groups of firms, global firms (firms cross-listed on a U.S. exchange), and non-global firms. *ADR* is a dummy variable that equals one if the stock is cross-listed (ordinary listings, or level 2 and 3 ADRs) during the sample period, and zero otherwise. Data are obtained from the primary depository banks and the stock exchanges. We then estimate the firm-level corporate governance cross-sectional regression equation separately for each sub-sample. Panel C of Table 4 presents the results.

For global firms the *EQ* coefficient is negative and significant in all specifications, which supports a negative relation between corporate governance ratings and earnings quality rankings in global firms. In contrary, for non-global firms the *EQ* coefficient is negative but insignificant in all specifications. Thus, there is only weak evidence of a negative relation between *S&P* ratings and *EQ* rankings in the sample of non-global firms.

While firm-level characteristics explain about 41.2% of ratings variation for global firms, they explain only 18.5% for non-global firms. When we consider country and industry fixed-effects in the sample of non-global firms the adjusted $R^2$ increases considerably to 77.8%, about four times. This significant incremental explanatory power of unobserved country environment over firm characteristics suggests that the country environment is better able to explain the variation of corporate governance in non-global firms than in global firms. Indeed, in the sample of global firms, the increase in adjusted $R^2$ is lower (from 41.2% to 85.1%).

Thus, as expected, we find that corporate governance and earnings quality are stronger substitutes for one another in global firms than in non-global firms. Cross-listing therefore plays an important role in explaining the relation between corporate governance and earnings quality around the world.

## ROBUSTNESS AND ADDITIONAL RESULTS

### Firm Visibility

Firm visibility is likely to affect the relation between corporate governance and earnings quality. Firms that are more visible to foreign investors and analysts and that are active in international markets are more likely to have incentives to improve corporate governance. We use two variables to control for the level of firm visibility: foreign sales and MSCI membership. Results (not tabulated) show that our main finding – of a substitute relation between corporate governance and earnings quality – is robust to the inclusion of these additional firm-level control variables. In fact, the *EQ* coefficient remains negative and statistically significant in all the specifications. The inclusion of these control variables adds almost no incremental explanatory power; the overall adjusted $R^2$ increases only slightly.

### Alternative Sample Composition

A potential concern is whether our results are driven by the inclusion of two countries with a large number of firms in our sample. Indeed, firms in Japan (116 firms) and the U.K. (81 firms) represent about 36% of the total. Results (not tabulated) show that our main findings are not affected by dropping Japanese and U.K. firms. The *EQ* coefficient is negative and statistically significant in all the specifications. The adjusted $R^2$s are now slightly lower.

### Alternative Corporate Governance and Earnings Quality Measures

As an alternative proxy for corporate governance we use the *ISS* ratings. *ISS* ratings cover only developed countries and are observed in 2003. The final sample consists of 1,058 firms in 22 countries. We run the firm-level corporate governance regression equation (1) using *ISS* ratings as the dependent variable and present the results in Panel A (Model 1) of Table 5. For brevity, Table 5 reports only estimates for EQ coefficient and adjusted $R^2$ of specification (4) of the model.

Overall, the results are consistent with those using the *S&P* ratings (Table 3). We find a strong negative association between *ISS* ratings and earnings quality rankings, even after controlling for unobserved industry and country heterogeneity. *EQ* coefficients are negative and significant in all specifications, suggesting that corporate governance and earnings quality are substitute mechanisms.

The adjusted $R^2$s are lower than those in Table 3. In fact, *EQ* and firm characteristics explain 12.1% of ISS rating variation compared to 28.2% in Table 3, and when we control for country and industry heterogeneity, the adjusted $R^2$ increases to 43.6%, compared to 76.7%. These results are consistent with our results on the role of economic development as the adjusted $R^2$s for the high economic development sample are lower than for the low economic development one.

Although all the earnings quality metrics included in *EQ* have been used extensively in the literature, they are not beyond criticism or free from concerns. We hope to minimize possible concerns about measurement error and omitted variables using an aggregate measure of earnings quality. One concern relates to our earnings conservatism measure (see Appendix) that may have undesirable properties for $\varphi_2$ close to and below zero. Following Bushman and Piotroski (2006) and Lara et al. (2009), among others, we use - $\varphi_{3,i}$ as an alternative measure of conservatism. The coefficient $\varphi_{3,i}$ measures the differential incorporation into earnings of negative news relative to positive news, Table 5, Panel A (Model 2), summarize the results. Overall, the results are consistent with those in Table 3. The EQ coefficient is negative and statistically significant in all the specifications. The adjusted $R^2$s are almost the same.

## TABLE 5
## CORPORATE GOVERNANCE AND EARNINGS QUALITY: ADDITIONAL RESULTS

Panel A shows results for alternative corporate governance and aggregate earnings quality measures. Model (1), CG is computed using ISS ratings. Model (2), EQ is computed using an alternative conservative measure: CONSER is - φ3,i from equation (11) in Appendix, which measures the differential incorporation into earnings of negative news relative to positive news. Model (3), EQ is computed includes only AQ, RELEV and CONSER. Panel B shows results for each S&P Categories ratings. Model (1), CG is Ownership Structure and Investor Relations (Ownership). Model (2), CG is Financial Transparency and Information Disclosure (Financial). Model (3), CG is Board and Management Structure and Process (Board). Panel C shows results for individual earnings quality measures. Model (1) EQ is AQ. Model (2), EQ is PERS. Model (3), EQ is PRED. Model (4), EQ is SMOOTH. Model (5), EQ is RELEV. Model (6), EQ is TIMEL. Model (7), EQ is CONSER.
The sample period is from 1990 to 2003 for the calculation of the earnings quality components of the EQ measure. Regressions include country fixed-effects and industry fixed-effects (two-digit SIC). Robust *t*-statistics are in parentheses. Boldface denotes significance at the 5% level.

**Panel A: Alternative Corporate Governace and Earnings Quality Measures**

| | (1) | (2) | (3) |
|---|---|---|---|
| EQ | **-0.1370** | **-0.1303** | **-0.0586** |
| | (-2.27) | (-2.61) | (-2.42) |
| Adjusted R-square | 0.436 | 0.766 | 0.763 |
| N | 1,058 | 537 | 541 |

**Panel B: S&P Categories**

| | (1) | (2) | (3) |
|---|---|---|---|
| EQ | -0.0322 | **-0.0931** | **-0.1066** |
| | (-0.73) | (-2.49) | (-2.23) |
| Adjusted R-square | 0.668 | 0.606 | 0.799 |
| N | 537 | 537 | 537 |

**Panel C: Individual Earnings Quality Measures**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| EQ | **-0.0687** | 0.0039 | **-0.0692** | **-0.0409** | **-0.0482** | **-0.0504** | **-0.0360** |
| | (-2.74) | (0.19) | (-2.63) | (-2.59) | (-2.19) | (-2.27) | (-1.99) |
| Adjusted R-square | 0.755 | 0.767 | 0.768 | 0.752 | 0.750 | 0.751 | 0.752 |
| N | 553 | 581 | 581 | 646 | 593 | 593 | 593 |

We also re-compute our aggregate earnings quality measure based on only three earnings attributes: AQ, *RELEV* and *CONSER*, since they are probably the least controversial earnings quality proxies. Table 5, Panel A (Model 3), summarize the results. Again, the results are broadly consistent with those presented in Table 3. The *EQ* coefficient is negative and statistically significant in all specifications, suggesting a strong negative relation between *S&P* ratings and this new aggregate earnings quality measure. The adjusted $R^2$s are also similar to those reported earlier.

### S&P Categories and Individual Earnings Quality Measures

We now check whether our primary results hold across the three categories of S&P ratings: (1) ownership structure and investor relations (Ownership); (2) financial transparency and information disclosure (Financial); and (3) board and management structure and processes (Board). Each of these categories captures different attributes of firm-level governance and disclosure. Table 5, Panel B, summarize the results. Results for the Board and Financial categories are largely consistent with those for total *S*&P ratings. The *EQ* coefficient is negative and significant in all specifications. We find no evidence of a reliable relation between Ownership ratings and earnings quality rankings.

Finally, we also check whether our primary results hold across the individual earnings quality measures. Panel C of Table 5 summarizes the results. We find a negative relation between *S&P* ratings and all individual earnings quality rankings, except for Persistence. These results suggest that our main

finding – of a substitute relation between corporate governance and earnings quality – does not depend on the particular way we measure earnings quality.

**Endogeneity**

An important concern with our findings is that governance structures and practices are endogenously determined depending on financial accounting characteristics. Armstrong et al. (2010) argue that information structures can both affect and be affected by governance structures.

We address the endogeneity issue by estimating CG and EQ regressions using a two-stage least squares (2SLS) method. This estimation technique corrects for the endogeneity of earnings quality, but we need to identify variables (i.e., instruments) that affect only earnings quality, but not corporate governance except indirectly through other independent variables.

We use the sales volatility (*STDSALES*), the length of the operating cycle (*OPERCYCLE*), and the frequency of negative earnings (*NEGNIBE*), as instruments for earnings quality. We assume that these innate variables (Francis et al. 2004) do not affect corporate governance (at least directly) but do affect earnings quality. We use the same control variables as in Table 4 for CG in the second-stage regression.

Results reported in Table 6 support our main finding of a substitute role between corporate governance and earnings quality after we correct for the endogeneity bias. The first-stage results show that *STDSALES* and *NEGNIBE* coefficients are negative and significant, consistent with the idea that firms with more volatile revenues and lower profitability have poorer earnings quality. *F*-tests that the instruments can be excluded from the first-stage regressions are strongly rejected (*F*-statistic is 24.43). Thus, we conclude that our instruments are strongly associated with *EQ* and therefore are not weak. We also perform a Hansen $X^2$-test of instrument orthogonality. This statistic jointly tests the null hypotheses of correct model specification and orthogonality between the instruments and the errors. Our instruments perform adequately (p-value is 0.619), indicating that we cannot reject the null hypothesis of instrument suitability. The second-stage results suggest the existence of a causal link from earnings quality to corporate governance. Overall, we conclude that strong corporate governance standards can make up for poor earnings quality.

## TABLE 6
## CORPORATE GOVERNANCE AND EARNINGS QUALITY: ENDOGENEITY

This table presents coefficients of the two-stage least squares cross-sectional regression system of equations at the firm-level of earnings quality (EQ) and corporate governance (CG). EQ is instrumented with sales volatility (STDSALES), measured as the standard deviation of sales revenues scaled by assets; the length of operating cycle (OPERCYCLE), computed as the log of the sum of days inventory and days accounts receivable; and the frequency of negative earnings (NEGNIBE), measured as a dummy variable that takes the value of one if net income before extraordinary items is negative and zero otherwise. All the others variables are defined as before. The sample period is from 1990 to 2003 for the calculation of the earnings quality components of the EQ measure. Robust *t*-statistics are in parentheses. Boldface denotes significance at the 5% level.

| | First Stage EQ | Second Stage CG |
|---|---|---|
| EQ | | **-0.2505** |
| | | (-3.10) |
| INVOP | **37.8364** | 16.8516 |
| | (2.93) | (1.73) |
| EXTFIN | -0.3415 | -0.0417 |
| | (-0.68) | (-0.08) |
| CLOSE | -0.0884 | 1.8224 |
| | (-0.03) | (0.71) |
| SIZE | 0.5320 | **2.4774** |
| | (1.08) | (6.61) |
| CASH | -7.5482 | 4.4655 |
| | (-1.07) | (0.95) |
| BM | **-2.3870** | -1.0084 |
| | (-2.03) | (-1.15) |
| LEV | 0.7401 | 3.6132 |
| | (0.18) | (1.29) |
| ROA | 2.2173 | **29.5177** |
| | (0.14) | (2.24) |
| STDSALES | **-18.4157** | |
| | (-1.99) | |
| OPERCYCLE | -0.5283 | |
| | (-0.50) | |
| NEGNIBE | **-22.2883** | |
| | (-8.21) | |
| F-test of instruments | 24.43 | |
| p-value | (0.000) | |
| Hansen overidentification test | | 0.96 |
| p-value | | (0.619) |
| Industry dummies | Yes | Yes |
| Country dummies | Yes | Yes |
| N | 535 | 535 |

## CONCLUSION

We examine the relation between corporate governance and earnings quality for a large sample of firms worldwide. Corporate governance is a complex system of interrelated internal and external mechanisms, and earnings quality is not easy to measure. Therefore, we use two widely known corporate governance ratings (S&P Transparency and Disclosure Ranking and the ISS Corporate Governance Quotient), to measure overall corporate governance, and construct an aggregate ranking based on a wide range of earnings attributes in order to measure overall earnings quality.

We find a negative and statistically significant relation between corporate governance ratings and earnings quality rankings, suggesting that corporate governance and earnings quality are substitute mechanisms. The justification for this result would be the lesser need to invest in costly governance mechanisms for those firms that already offer high levels of earnings quality.

We also find that the country environment is the major determinant of firm-level corporate governance variation. The levels of economic development and of investor protection in a country play an important role in shaping the relation between corporate governance and earnings quality. There is a negative relation between corporate governance ratings and earnings quality rankings in high economic development and strong investor protection countries, but no relation in low economic development and weak investor protection countries. Thus, corporate governance and earnings quality are substitute mechanisms only in high-quality country environments. A plausible reason for this international difference in behavior is that governance mechanisms are likely to be truly effective only in the more developed countries in our sample. Therefore, the substitution effect between governance and earnings quality would only make sense for firm from those countries. Consistent with our interpretation, examination of the role of U.S. cross-listing indicates that corporate governance and earnings quality are stronger substitutes in the case of cross-listing firms.

Overall, our results suggest that poorer earnings quality increases the demand for corporate governance systems to mitigate information asymmetry and agency conflicts between managers and shareholders. This substitute role for corporate governance and earnings quality suggests that strong corporate governance standards can make up for poor earnings quality, which is consistent with the idea that limitations of financial accounting information imply a demand for costly monitoring mechanisms.

## ENDNOTES

1. See Bushman and Smith (2001, 2003) and Armstrong, Guay and Weber (2010) for a survey on the governance role of financial accounting information.
2. The use of corporate governance ratings is fairly common in the literature (e.g., Doidge et al., 2007; Aggarwal et al., 2006; Durnev and Kim, 2005; Klapper and Love, 2004; Bauwhede, 2009).
3. Scores are not affected by nondisclosure items that are not applicable.
4. The sample includes firms from: Argentina, Australia, Austria, Belgium, Brazil, Chile, China, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Portugal, Singapore, Spain, Sweden, Switzerland, Taiwan, Thailand and the UK.
5. In most cases, the effect of these firm characteristics on governance is ambiguous, and the results are mixed. It is not our purpose here to discuss the role of these firm characteristics as corporate governance determinants. Instead, our goal is to investigate the relation between corporate governance and earnings quality, and we use these firm characteristics only as control variables.
6. La Porta et al., 1998 argue that in countries where the accounting and legal systems provides relatively poor investor protection, there is a substitution toward costly monitoring by "larger" shareholders.

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## APPENDIX – EARNINGS QUALITY MEASURES

| Earnings Attributes | | Definition |
|---|---|---|
| *Accruals Quality* | $AQ_i$ | Is the standard deviation of residuals from the Dechow and Dichev (2002) model: $WCA_{i,t} = \beta_{0,i} + \beta_{1,i}CFO_{i,t-1} + \beta_{2,i}CFO_{i,t} + \beta_{3,i}CFO_{i,t+1} + \nu_{i,t}$. $WCA_{i,t}$ is firm i's working capital accruals in year t, and is computed as $WCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta Debt_{i,t}$, where $\Delta CA_{i,t}$ is firm i's change in current assets between year t – 1 and year t$\Delta CL_{i,t}$ is firm i's change in current liabilities between year t – 1 and year t; $\Delta Cash_{i,t}$ is firm i's change in cash between year t – 1 and year t; and$\Delta Debt_{i,t}$ is firm i's change in debt in current liabilities between year t – 1 and year t. $CFO_{i,t}$ is firm i's cash flow from operations in year t. All variables are scaled by total assets at the beginning of year t, and is computed as $CFO_{i,t} = NIBE_{i,t} - (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta Debt_{i,t} - Dep_{i,t})$, where $NIBE_{i,t}$ is firm i's net income before extraordinary items in year t, and $Dep_{i,t}$ is firm i's depreciation and amortization in year t. |
| *Earnings Persistence* | $PERS_i$ | Is the slope coefficient estimate of the regression: $E_{i,t} = \mu_{0,i} + \mu_{1,i} E_{i,t-1} + \upsilon_{i,t}$, where $E_{i,t}$ is firm i's net income before extraordinary items in year t divided by the weighted average number of outstanding shares during year t. |
| *Earnings Predictability* | $PRED_i$ | Is the square root of the estimated error variance of the regression: $E_{i,t} = \mu_{0,i} + \mu_{1,i} E_{i,t-1} + \upsilon_{i,t}$, where $E_{i,t}$ is firm i's net income before extraordinary items in year t divided by the weighted average number of outstanding shares during year t. |
| *Earnings Smoothness* | $SMOOTH_i$ | Is the ratio of the firm-level standard deviation of earnings and the standard deviation of operating cash flows, where $NIBE_{i,t}$ and $CFO_{i,t}$, variables described before, are both scaled by total assets at the beginning of year t. |
| *Value Relevance* | $RELEV_i$ | Is the explanatory power of the regression: $RET_{i,t} = \lambda_{o,i} + \lambda_{1,i} EARN_{i,t} + \lambda_{2,i} \Delta EARN_{i,t} + u_{i,t}$, where $RET_{i,t}$ is firm i's 15-month return ending three months after the end of fiscal year t; $EARN_{i,t}$ is firm i's net income before extraordinary items in year t, scaled by market value at the beginning of year t; and $\Delta EARN_{i,t}$ is firm i's change in net income before extraordinary items of firm i between year t –1 and year t, scaled by market value at the beginning of year t. |

| | | |
|---|---|---|
| *Earnings Timeliness* | $TIMEL_{i,}$ | Is the explanatory power of the Basu (1997) regression: $EARN_{i,t} = \varphi_{o,i} + \varphi_{1,i}NEG_{i,t} + \varphi_{2,i}RET_{i,t} + \varphi_{3,i}NEG_{i,t}\ RET_{i,t} + \eta_{i,t}$ , where $NEG_{i,t}$ =1 if $RET_{i,t} < 0$ and zero otherwise, and the other variables are as defined before. |
| *Earnings Conservatism* | $CONSER_i$ | Is the ratio $(\varphi_{2,i} + \varphi_{3,i}) / \varphi_{2,i}$ from the Basu (1997) regression: $EARN_{i,t} = \varphi_{o,i} + \varphi_{1,i}NEG_{i,t} + \varphi_{2,i}RET_{i,t} + \varphi_{3,i}NEG_{i,t}\ RET_{i,t} + \eta_{i,t}$ , where $NEG_{i,t}$ =1 if $RET_{i,t} < 0$ and zero otherwise, and the other variables are as defined before. |

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