

Corporate Governance, Accounting Outcomes, and Organizational Performance

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Abstract

The empirical research examining the association between typical measures of corporate governance and various accounting and economic outcomes has not produced a consistent set of results. We believe that these mixed results are partially attributable to the difficulty in generating reliable and valid measures for the complex construct that is termed “corporate governance.” In this paper we develop measures for the dimensions of corporate governance. Using a sample of 2,106 firms and 39 structural measures of corporate governance (e.g., board characteristics, stock ownership, institutional ownership, activist stock ownership, existence of debt-holders, mix of executive compensation, and anti-takeover variables), our exploratory principal component analysis suggests that there are 14 dimensions to corporate governance. We find that these indices have a mixed association with abnormal accruals, little relation to accounting restatements, but some ability to explain future operating performance and future excess stock returns.

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1. Introduction

Corporate governance refers to the set of mechanisms that influence the decisions made by managers when there is a separation of ownership and control. Some of these monitoring mechanisms are the board of directors, institutional shareholders, and operation of the market for corporate control. The importance of this topic is obvious from the considerable growth in the empirical literature on corporate governance across accounting, economics, finance, management, and corporate strategy literatures.¹ Typical research studies examine whether different corporate governance structures impact or constrain executive behavior and/or have an impact on organizational performance. Examples of these types of studies are Morck, Shleifer, and Vishny (1988), Byrd and Hickman (1992), Brickley, Coles and Terry (1994), Yermack (1996), Core, Holthausen, and Larcker (1999), Klein (2002), and Gompers, Ishii, and Metrick (2003).²

It is difficult to conceive of a situation where corporate governance is not relevant for understanding managerial behavior and organizational performance. However, the open research question is whether the structural indicators that are typically used to measure corporate governance actually capture the essence of this complex construct and

¹ There are also many organizations that sell governance ratings (e.g., GovernanceMetrics International, Institutional Shareholder Services, Investor Responsibility Center, Standard & Poors, and The Corporate Library). The growth in this type of service offerings attests to the perceived importance of corporate governance issues. Although the precise computation of these ratings is proprietary, the scores seem to be based on board independence, distribution of ownership, and other structural characteristics. Despite considerable claims by these organizations, we are not aware of rigorous evidence regarding the ability of these ratings to predict managerial behavior or organizational performance. One possible exception is Gompers, Ishii, and Metrick (2003), but the recent work by Cremers and Nair (2003) and Core, Guay, and Rusticus (forthcoming) demonstrates that the Gompers, Ishii and Metrick (2003) results are statistically fragile.

² Reviews of the extensive corporate governance literature have been provided by Shleifer and Vishny (1997), Bhagat and Black (2002) and Bushman and Smith (2001).

exhibit low levels of measurement error.³ While prior work has examined many measures of corporate governance, the results are frequently contradictory and a consistent set of empirical results has yet to emerge regarding the importance of corporate governance for understanding accounting outcomes and organizational performance.

We suspect that part of the explanation for these mixed results is that measures used in the empirical analysis exhibit a modest level of reliability and construct validity. Most studies use either a single indicator for corporate governance, or arbitrary indices. The measurement error introduced from using a single indicator (e.g., percentage of external board members) for a complex construct (e.g., board independence) will almost certainly cause the regression coefficients to be inconsistent.⁴ Similar econometric problems will be produced if a set of indicators are simply summed to form some type of governance index (e.g., the “G-score” used by Gompers, Ishii and Metrick, 2003). The use of multiple indicators can alleviate the measurement error associated with a single indicator. However, unless the individual indicators are measuring the same underlying governance construct, the resulting index will be difficult to interpret and contain substantial measurement error.

³ We define structural indicators as measures of corporate governance that can be produced by external observers (e.g., board size, equity owned by the officers, etc.). Although infeasible for large sample analysis, it is also possible to develop measures of corporate governance from interviews with board members and a detailed assessment of governance practices from inside the organization (e.g., Leblanc and Gillies, 2005). For obvious reasons, most empirical research on corporate governance relies on structural indicators.

⁴ It is important to note that in a multiple regression analysis the inconsistent parameter estimates caused by measurement error in the governance variables does not necessarily attenuate the estimates or result in conservative assessments of statistical significance (See Bollen, 1989, pp. 159-167 for a summary discussion of this issue).

Prior research also tends to use a limited sample of the dimensions of corporate governance and this will generally create correlated omitted variable problems. For example, researchers using only the “G-score” are capturing some combination of anti-takeover provisions, but ignoring other important dimensions of governance (e.g., ownership, board structure, etc.). Unless the omitted dimensions are uncorrelated with those included in the analysis (which is a very unlikely outcome), the interpretation of the regression coefficient for the “G-score” will be problematic.

The purpose of this paper is to provide an initial inquiry into the dimensions of corporate governance and start the process of developing reliable and valid measures for this important construct.⁵ This task is especially difficult because (to our knowledge) there is not a well-developed theory about the complex, multi-dimensional nature of corporate governance or a conceptual basis for selecting the relevant governance characteristics to include in an empirical study.⁶ Thus, it is important to realize our research process is inherently exploratory and subsequent research will be necessary to extend and refine these measures.

Our research is designed to assess whether standard structural measures of corporate governance are useful in understanding corporate behavior. If we find unexpected relations and/or statistically insignificant results after a careful attempt to develop reliable and consistent measures of governance, this raises concerns about the

⁵ This is an important topic for accounting because our discipline is fundamentally about measurement. While there has been considerable discussion about measuring certain constructs such as accruals (e.g., Dechow, Sloan and Sweeney 1996) and cost of capital (e.g., Easton and Monahan 2005), there has been relatively little attention devoted to the measurement of corporate governance.

⁶ As discussed by Harris and Raviv (2005), there is relatively little formal theoretical work on corporate governance. Harris and Raviv (2005) and Hermalin and Weisbach (1998) provide some theoretical insights into the structure of board. However, theoretical work on the more general construct of corporate governance (to our knowledge) is unavailable.

use of these traditional structural measures for archival governance research. However, this result does not necessarily mean that corporate governance does not affect executive behavior or organizational performance. This result simply implies that our ability as researchers to measure and capture the construct of corporate governance is very limited with existing structural measures.

Our measurement analysis starts with a broad sample of structural indicators of corporate governance including board characteristics, anti-takeover provisions, compensation characteristics, ownership and capital structure characteristics. Using exploratory principal component analysis (PCA), we find that 14 factors characterize the dimensionality of our 39 individual governance indicators. This observed structure enables us to identify a set of indicators for each dimension of corporate governance and compute indices that exhibit reasonable levels of reliability and construct validity for an exploratory study.

The resulting 14 corporate governance indices exhibit a mixed association with abnormal accruals and little relation to accounting restatements. However, we find that firms with a greater proportion of block-holders, a compensation mix that is weighted toward accounting performance, lead directors, smaller boards, and fewer busy directors exhibit superior future operating performance. Further, future excess stock returns are higher when compensation mix is weighted toward accounting performance, there is a lead director, and insider power is low. Thus, the typical structural indicators of corporate governance used in academic research and institutional rating services have only a modest ability to explain “accounting manipulations,” but exhibit some ability to explain future operating and stock price performance.

The remainder of the paper is divided into five sections. Section 2 describes the sample selection and the governance indicators used in the study. Section 3 presents the PCA results and develops our 14 indices for corporate governance. Section 4 presents the association between these governance indices and abnormal accruals, restatements, future operating performance, and future excess stock price returns. Section 5 provides a discussion of how our results are affected by using an alternative methodological approach (recursive partitioning), a single cross-section of data that coincides with Sarbanes Oxley Act of 2002, and possible endogeneity of our governance constructs. A summary of the results and the conclusions are presented in Section 6.

2. Sample Selection and Corporate Governance Indicators

2.1 Sample

Our sample was generated from the overlap between two comprehensive data sets. The first data set consists of the anti-takeover provisions for companies covered during 2002 and 2003 by TrueCourse, Inc. ($n = 3,651$). The anti-takeover data covers only U.S. incorporated companies that are included in the major indices (e.g., Fortune 500, Standard & Poors Super 1500, etc.), amended their poison pill since 2001, and/or completed a firmly underwritten IPO since 1999. The second data set consists of companies covered by Equilar, Inc. whose fiscal year ends are between June, 2002 and May, 2003 with complete data on board, board committees (audit and compensation), and equity ownership by executives and board members ($n = 3,000$).

After merging the TrueCourse and Equilar data, we have a final sample of 2,106 individual firms with complete data. This sample spans many sectors of the economy and has a distribution of firms that is very consistent with the composition of the

complete Compustat file (see Table 1, panel A). Our sample represents approximately 70 percent of the market capitalization of the Russell 3000 as of the end of 2003.⁷ Finally, our sample consists of firms that are larger, more profitable, exhibit a lower Book-to-Market, and have more following by analysts than all other Compustat firms (see Table 1, panel B).⁸

2.2 Corporate Governance Indicators

We collect indicators of corporate governance in seven general categories: characteristics of the board of directors, stock ownership by executives and board members, stock ownership by institutions, stock ownership by activist holders, debt and preferred stock holdings, compensation mix variables and anti-takeover devices. Our board of director, compensation mix and executive and board ownership data are obtained from Equilar, stock ownership by institutions and activists is collected from Spectrum data files (13F filings), debt and preferred stock data are obtained from Compustat, and anti-takeover data are collected from TrueCourse.

Drawing on prior studies (e.g., Klein, 1998, Bhagat and Black, 2002, Core, Holthausen and Larcker, 1999, Ferris, Jagannathan and Pritchard, 2003, and others), our board of director variables are the number of meetings for the audit committee, compensation committee, and the total board (denoted as *# AC Meetings*, *# CC Meetings*, and *# Board Meetings*, respectively), number of directors serving on the compensation

⁷ Our sample only covers one year and this limits our ability to generalize the results. However, the single year of data covers a very recent time period and prior work involving large samples also is restricted to a single year (e.g., Bhagat, 2004, Brown and Caylor, 2004, and Ashbaugh, Collins, and LaFond, 2004). We provide further discussion concerning the impact of this research design choice in Section 5.

⁸ Since one of our data sources (TrueCourse, Inc.) covers firms that are included in major indices, the observation that our sample consists of large firms is to be expected. To the extent that larger and more visible firms have better or more appropriate governance structures, this will tend to reduce the power of our empirical tests.

committee, audit committee, and the total board (denoted as *CC Size*, *AC Size*, and *Board Size*, respectively), fraction of board comprised of insider (executive) directors (denoted as *% Board Inside*), fraction of the compensation committee and audit committee that is comprised of affiliated directors (denoted as *% CC Affiliated* and *% AC Affiliated*, respectively)⁹, indicator variables equal to one if the chairperson of the compensation committee and audit committee is affiliated and zero otherwise (denoted as *CC Chair Affiliated* and *AC Chair Affiliated*, respectively), the fraction of outside directors and affiliated directors that serve on four or more other boards, and the fraction of inside directors that serve on two or more boards (denoted as *% Busy Outsiders*, *% Busy Affiliated*, and *% Busy Insiders*, respectively), fraction of outside, affiliated, and inside directors that are older than 70 (denoted as *% Old Outsiders*, *% Old Affiliated*, and *% Old Insiders*, respectively), an indicator variable equal to one if there is a lead director (an outside director that can call meetings of all outside directors in executive session) on the board and zero otherwise (denoted as *Lead Director*), an indicator variable equal to one if an internal executive holds the position of chairperson of the board and zero otherwise (denoted as *Insider Chairman*), and the fraction of affiliated and outside directors that were appointed by existing insiders (denoted as *% Affiliated Appointed* and *% Outsiders Appointed*, respectively).¹⁰

Consistent with prior research (e.g., Ashbaugh, Collins, and LaFond, 2004, Bhagat, 2004, and Klein, 1998), the typical board meets seven times a year, has about

⁹ We use the definition of affiliated (or “grey”) directors developed by Equilar (which is a combination of SEC, NYSE, and NASD guidelines). Any outside directors that were mentioned in the “certain transactions” section or a former executive were classified as affiliated.

¹⁰ This variable was measured by comparing the term of an existing board member to the maximum term for the set of insider directors. If there were no affiliated directors, this variable was set equal to zero.

nine members with one or two internal executives, the chairman of the board is usually an internal executive, and there is not a lead director (see Table 2). Most members of the compensation and audit committee are outsiders, but there is some evidence that the chair of these committees is an affiliated director. In contrast to inside directors, outside or affiliated directors are generally not classified as busy. Most boards are not composed of old directors, but a high percentage of the affiliated and outside directors were appointed by existing inside directors.

Our board and executive ownership variables are the fraction of outstanding shares held by the average outside director (denoted as *% Outsiders Own*)¹¹, fraction of outstanding shares held by the top executive (denoted as *% Top Exec Own*), fraction of outstanding shares held by the average executive director after excluding the holdings of the top executive (denoted as *% Executives Own (Excl. Top)*), and fraction of outstanding shares held by the average affiliated director (denoted as *% Affiliated Own*). Similar to prior work, the median board and executive group owns less than one percent of the outstanding equity (e.g., Hall and Liebman, 1998). However, there is considerable skewness in these measures as evidenced by the mean being substantially larger than the median.

Institutional ownership is measured as the fraction of outstanding shares owned by block-holders (denoted as *% Block Own*), number of block-holders (denoted as *# Block*), and shareholding of the largest institutional owner (denoted as *% Largest*).¹² The average company in our sample has two block-holders that own 16 percent of the

¹¹ We exclude stock option holdings in our board and executive ownership computations.

¹² A block-holder is defined as a shareholder who holds more than five percent of outstanding shares.

outstanding shares (with the largest block-holder owning about nine percent of the outstanding shares).

The activist variables are measured using the number of activist institutions holding shares (denoted as *# Activists*) and the fraction of outstanding shares held by activist institutions (denoted as *% Activists Own*). Activist institutions are identified using the information contained in Cremers and Nair (2003).¹³ The average company in our sample has approximately seven activists holding a total of about two percent of the outstanding shares.

The role of debt as a governance mechanism is measured using the ratio of book value of debt (Compustat data item 9 plus data item 34) to the market value of equity (Compustat data item 199 * data item 25) and ratio of book value of preferred equity (Compustat data item 130) to the market value of equity (Compustat data item 199 * data item 25). These two leverage ratios are denoted as *Debt to Market* and *Preferred to Market*, respectively. The median company has a book value of debt that is approximately 25 percent market capitalization and preferred stock that is approximately zero percent of market capitalization.

Compensation mix is measured by two variables. First, we measure the fraction of total annual CEO compensation that is comprised of performance plans, stock options

¹³ The following public pension funds are classified as activists (Spectrum manager number): California Public Employees Retirement System (12000), California State Teachers Retirement (12100 and 12120), Colorado Public Employees Retirement Association (18740), Florida State Board of Administration (38330), Illinois State Universities Retirement System (81590), Kentucky Teachers Retirement System (49050), Maryland State Retirement and Pension System (54360), Michigan State Treasury (57500), Montana Board of Investment (58650), Education Retirement Board New Mexico (63600), New York State Common Retirement Fund (63850), New York State Teachers Retirement System (63895), Ohio School Employees Retirement System (66550), Ohio School Employees Retirement System (66610), Ohio State Teachers Retirement System (66635), Texas Teachers Retirement System (82895 and 83360), Virginia Retirement System (90803), State of Wisconsin Investment Board (93405).

and restricted stock grants (*% Long Term Mix*).¹⁴ Second, we measure the fraction of total annual CEO compensation that is comprised of performance plans and annual bonus (*% Accounting Mix*). Data for compensation mix are obtained from Equilar. The average firm pays slightly more than half of total CEO pay in the form of long term incentive payments, and about sixteen percent in the form of accounting based incentive payments.

Our anti-takeover variables are measured using indicator variables regarding whether a firm has a staggered (or classified) board of directors (denoted as *Staggered Board*), requires a supermajority vote for a business combination (denoted as *Supermajority*), is incorporated in a state (PA, OH, MA or WI) with relatively greater protections to incumbent management (denoted as *State Incorporated*), has unequal voting rights across shareholders or dual classes of stock (denoted as *Unequal Voting*), and has a poison pill or where stock purchases can be made at substantial discounts by existing shareholders if a hostile takeover attempt is made on the firm (denoted as *Poison Pill*).¹⁵ Sixty three percent of our sample has a staggered board, 24 percent requires a supermajority vote for takeovers, 8 percent are incorporated in management friendly states, nine percent have dual classes of stock, and 51 percent have a poison pill.

¹⁴ Salary and annual bonus are valued based on payments, performance plans are valued using the target payout, stock options are valued using the Black-Scholes model, and restricted stock is valued using the stock price at the date of grant.

¹⁵ The TrueCourse data consists of 15 individual anti-takeover provisions. Rather than attempting to analyze this extensive set of variables, we restrict our attention to a smaller subset of key anti-takeover variables (similar to Gompers, Ishii and Metrick, 2004 who focus on dual class companies and Bebchuk and Cohen, 2005 who focus on the presence of a staggered board). One provision that is commonly used in prior work is blank check preferred (e.g., Daines and Klausner, 2001). We drop this provision because 92 percent of the sample has blank check preferred, thus there is little variance in this variable.

3. Corporate Governance Indices

3.1 Methodology

In order to develop our corporate governance indices, we use exploratory principal component analysis (PCA) to identify the underlying dimensions or structure of corporate governance and determine which indicators are associated with each factor. We retain all factors with an eigenvalue greater than unity. This results in 14 factors that retain 61.7 percent of the total variance in the original data. This reduced solution is then rotated using an oblique rotation that allows the retained factors to be correlated in order to enhance interpretability of the PCA solution. These 14 factors represent the underlying dimensions of corporate governance for our selected set of indicators (see Table 3).¹⁶

To interpret the factors, it is necessary to determine which indicators have a statistical and substantive association with each factor. We associate each factor with those variables that have a loading (or the correlation between the factor and an indicator) that exceeds 0.40 in absolute value and are statistically different from zero at conventional levels. Statistical significance is determined using traditional bootstrapping methods (1,000 samples with replacement) for the rotated 14 factor solution. The resulting variables that are associated with each factor are summarized in Table 3.

Each factor (or index) is assigned a name based on the characteristics of the indicators that are related to the factor. Several of the factors are associated with indicators that one might expect ex ante to be highly correlated (e.g., *Meetings* and *Board*

¹⁶ We use an exploratory approach to gain some initial insight into the structure of corporate governance because there is little prior theory or empirical analysis regarding the dimensions of corporate governance. However, once a consistent set of results emerge about these dimensions and appropriate indicators, it would be natural for researchers to adopt a confirmatory latent variable methodological approach.

Size), and thus it is simple to name these factors. However, the naming of other factors can be more difficult. For example, the first factor has three relevant indicators that are measures of stock ownership with two of the indicators related to activist institutions and a third indicator with a negative loading related to ownership by outside directors. Thus, this governance factor is named “Active” and high scores on this factor are associated with activist interest but low outside director interest. The third factor has four indicators that are all related to affiliated directors holding important positions on the audit and compensation committees. Thus, this governance factor is named “Affiliated.” We use this general approach to name the other factors described in Table 3.¹⁷

The PCA results in Table 3 produce an interpretable solution (e.g., there are no significant cross-loadings or situations where the same indicator is associated with more than one factor). However, since corporate governance is a complex general construct, it should not be surprising to find some unexpected results in the PCA solution. For example, *% Affiliated Own* loads (negatively) on the factor that we name “Anti-Takeover I.” The primary indicators of this factor measure the extent of anti-takeover provisions adopted by the firm via poison pills and the presence of a staggered (or classified) board and we use these associations to name this factor. Although somewhat speculative, *%*

¹⁷ The PCA results also highlight another problematic aspect of prior research using and interpreting a single indicator. In particular, assume that the researcher considers the structure of committees more important than the structure of the overall board for understanding earning manipulation. As a result, committee size and number of meetings is used in the regression analysis. Assume that the results are statistically significant in the expected direction for these variables (e.g., larger committees and fewer committee meetings are associated with higher abnormal accruals). Unfortunately, it is not appropriate to conclude that committee structure has an important association with earnings management because the PCA shows that the committee structure is very highly correlated with the overall board structure (i.e., these indicators load on the same factors).

Affiliated Own may load on this factor because there is not a need in these organizations for affiliated directors to take an equity position to protect against takeover threats.

With the exception of Active, Anti-Takeover I, Compensation Mix and Lead Director, the governance index scores are computed using the average equal-weighted sum of the standardized indicators associated with each factor (Grice and Harris, 1998). The four factors mentioned above (the exceptions) contain either substitute mechanisms or exhibit a combination of positive and negative loadings. To compute factor scores for these four factors we explicitly incorporate this substitutability across components. For example, the factor Active exhibits a negative association between stockholdings of outside directors and equity ownership by activist funds. We compute the Active factor as the sum of the standardized *#Activists* and *% Activists Own* less standardized *% Outsiders Own*, divided by three. The remaining three factor scores are calculated using the respective standardized components as follows to reflect the substitutability: Anti-Takeover I is the sum of *Staggered Board* and *Poison Pill* minus *% Affiliated Own*, divided by three. Compensation Mix is *% Accounting Mix* minus *% Long Term Mix*, divided by two. Lead Director is *Lead Director* minus *Insider Chairman*, divided by two (i.e., this factor is increasing in external monitoring). The descriptive statistics for the computed factors scores are presented in Table 4 (Panel A). Since these scores are weighted combinations of standardized variables, the mean governance score for each index is equal to zero.

The reliability (or the inverse of measurement error) of the indices is computed using the Cronbach alpha for indicators associated with each governance construct. The mean (median) coefficient alpha is 0.532 (0.568). Although the levels of reliability are

somewhat lower than the thresholds suggested by Nunnally (1967), these results are common in the early stages of measurement development. Moreover, none of the confidence intervals for correlations among the governance indices include unity at conventional levels of statistical significance (Table 4, Panel B). This suggests that our governance indices are statistically distinct and exhibit construct validity.¹⁸ The reliability and construct validity analyses suggest that psychometric properties of the indices are reasonable given the exploratory nature of this study. We certainly acknowledge that our indices are not perfect and it is important to refine corporate governance indices in future research.

3.2 Expected Associations

We classify Board Size, Affiliated, Insider Appointed, Insider Power, Anti-Takeover I, Anti-Takeover II, Old Directors and Busy Directors as increasing in “bad” governance. Prior research suggests that firms with bigger boards perform worse than firms with smaller boards (Yermack, 1996). The presence of affiliated directors on the board and various committees is often argued as compromising the independence of the board/committee (Klein, 1998). The presence of a dual CEO-Chairperson (Yermack, 1996) and outsiders and/or affiliates who have been appointed by incumbent management also is assumed to erode the independence of the board. Both anti-takeover factors capture measures that are designed to reduce the power of the market for corporate control in disciplining the firm. Finally, old and busy directors are likely to be less active

¹⁸ While many of these correlations between factors are statistically significant at conventional levels, the absolute value for most of these correlations is small in magnitude. With regard to some of the larger correlations (Spearman denoted as r_s , Pearson as r_p), we observe that companies with activist shareholders tend to be associated with companies with larger boards ($r_s = 0.356$, $r_p = 0.301$) and busy directors ($r_s = 0.372$, $r_p = 0.325$). Firms with insider appointed boards tend to have considerable power concentrated within the firm ($r_s = 0.346$, $r_s = 0.270$). Finally, firms with affiliated directors serving on key board committees tend not to adopt anti-takeover provisions ($r_s = -.317$, $r_p = -0.245$).

monitors relative to younger and less busy directors (e.g., Core, Holthausen and Larcker, 1999).

Compensation mix is increasing in remuneration paid on the basis of accounting numbers and decreasing in remuneration paid in stock options and restricted stock. Accounting based compensation plans may create perverse incentives for management to be myopic in their decision making with subsequent adverse consequences for firm value. Conversely, others have argued that the option intensity of executive compensation packages has created perverse incentives for managerial decision making (e.g., Erickson, Hanlon and Maydew, 2004 and Peng and Roell, 2003). Therefore, we classify Compensation Mix as weakly increasing in “bad” governance.

Active, Block, Meetings, Debt, and Lead Director are classified as increasing in “good” governance. The presence of a large, and/or active block-holder is typically argued to be beneficial through the monitoring benefit of a financially sensitive shareholder (Shleifer and Vishny, 1997). The number of meetings held by the board and committees should be evidence of monitoring activity. The presence of debt-holders also offers additional monitoring benefit via external capital providers who have the incentive and ability to monitor firm activity to protect invested principle. The appointment of a non-executive director as a lead director is expected to create additional monitoring benefit on incumbent management.

4. Results

Our methodological approach is similar to the techniques used in most prior work examining the impact of corporate governance on various dependent variables. In particular, we use a multiple regression (or logistic) model of the following form:

$$\text{Dependent Variable}_t = \alpha + \Sigma\gamma\text{Controls} + \Sigma\beta\text{Governance Factors}_t + \varepsilon_t$$

One important feature in this structure is that the governance factors are assumed to have no impact on the controls (and thus no indirect impact on the dependent variable). As a result, this structure may result in conservative estimates for the impact of governance on the dependent variable. Another approach is to only include governance factors as independent variables, or:

$$\text{Dependent Variable}_t = \alpha + \Sigma\beta\text{Governance Factors}_t + \varepsilon_t$$

This structure would be appropriate if governance impacts the control variables and both the governance and control variables impact the dependent variable (i.e., the estimated regression coefficients for the governance variables will capture the total effect or the sum of the direct effect and the indirect effect through the controls). Both sets of regression estimations are included in our analyses. We also compute the total R^2 for the governance indices and separate incremental R^2 's for governance and the controls.¹⁹ We report the statistical significance and explanatory power for the governance factors both before and after including various control variables, thereby allowing us to assess a lower and upper bound for the explanatory power of the governance factors.

In the absence of a sophisticated theoretical model, we make the traditional assumption that higher levels of governance are associated with better accounting and economic outcomes for the firm. We expect a negative (positive) relation between governance indices that are hypothesized as “good” (“bad”) and abnormal accruals and

¹⁹ As with all studies of this type, endogeneity is a potential problem because most (perhaps all) of the governance constructs are choice variables. This econometric problem will produce inconsistent estimates for both the coefficients and standard errors. As discussed in Larcker (2003) and Larcker and Rusticus (2005), it is not clear how to resolve this problem unless exogenous instruments can be identified and n-stage least squares methods are used in the estimation. We acknowledge that our results are limited by the endogeneity of our independent variables. We provide one attempt at addressing endogeneity in Section 5.

restatements and a positive (negative) relation between governance indices that are hypothesized as “good” (“bad”) and future operating and stock price performance.

4.1 Abnormal Accruals

Accruals, Control Variables and Prior Literature

Measures of abnormal accruals are typically used as surrogates for earnings quality (e.g., Klein, 2002 and Frankel et al., 2002). The flexibility afforded through accrual accounting makes the accrual component of earnings less reliable than the cash flow component and therefore a potentially useful measure for examining the quality of financial reports. As is standard in the literature, we are interested in identifying the “unexpected” (also called discretionary or abnormal) component of total accruals. Jones (1991) is the standard technique used for this decomposition. Total accruals are regressed on variables that are expected to vary with “normal” accruals. We use a cross-sectional (as opposed to time series) version of the Jones model due to its superior specification and less restrictive data requirements (DeFond and Subramanyam, 1998 and Bartov, Gul and Tsui, 2001). Limitations of this measure are the standard criticisms associated with any expectation model. Deficiencies in the set of independent variables and the functional form can lead to misclassification of normal accruals as abnormal and vice versa (e.g., Bernard and Skinner, 1996).

We use an accrual model which builds on the modified Jones model of Dechow, Sloan and Sweeney (1995). The modified Jones model assumes that the change in revenues less the change in accounts receivable is free from managerial discretion (i.e., credit sales are assumed to be abnormal) and that capital intensity drive normal accruals. We include two additional independent variables that have been shown to be correlated

with measures of unexpected accruals. First, we include the book-to-market ratio (*BM*). *BM* is measured as the ratio of the book value of common equity (Compustat item 60) to the market value of common equity (Compustat item 25 x item 199). *BM* is included as a proxy for expected growth in the firm's operations. We expect to see large accruals for growing firms (see also McNichols 2000, 2002). Second, we include a measure of current operating performance. Previous research has shown that measures of unexpected accruals are more likely to be misspecified for firms with extreme levels of performance (Dechow et al., 1995). We therefore include current operating cash flows, *CFO* (Compustat item 308), as an additional independent variable. The advanced model is estimated as follows:

$$TA = \alpha + \beta_1(\Delta\text{Sales}-\Delta\text{REC}) + \beta_2\text{PPE} + \beta_3\text{BM} + \beta_4\text{CFO} + \varepsilon$$

Total Accruals (TA) is the difference between operating cash flows (Compustat item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. ΔSales is the change in sales (item 12) from the previous year to the current year, ΔREC is the difference in accounts receivable (item 302) from the start to the end of the year, and PPE is the end of year property, plant and equipment (item 7). All variables are scaled by the average of total assets using assets from the start and end of the fiscal year (item 6). The residual value from this model is labeled *Abnormal Accruals*, the estimate of unexpected or abnormal accruals from our extended Jones model. Independent variables in the accrual model are all winsorized to be no greater than one in absolute value, with the exception of *BM* that is winsorized at the 2nd and 98th percentiles. We estimate the model for each two-digit SIC group separately with the

requirement that there be at least 10 firms in each group. This leaves a sample size of 1,484 firms for the abnormal accrual analysis.

Consistent with prior research, we find a positive coefficient on ($\Delta Sales - \Delta REC$) and a negative coefficient on PPE (the traditional parameters in the modified Jones model). We also find that BM and CFO are both negatively associated with total accruals. The explanatory power of the abnormal accrual model (adjusted R^2) averages 27 percent across industry groups.

In the tests that follow, we examine the raw (or signed) values for abnormal accruals. We also examine the relation between our governance measures and positive and negative abnormal accruals separately to determine whether governance has a differential impact on income-increasing and income-decreasing behaviors.

Previous research has found only weak associations between measures of corporate governance (such as the composition of the board and audit committees, financial expertise of board and committee members, and stock ownership of board members) and measures of the absolute value of abnormal accruals (e.g., Klein, 2002). It is, however, not clear how robust these patterns are to more recent and larger samples, inclusion of a more complete set of governance factors and whether the results are driven by directional or non-directional accrual measures.

Abnormal Accruals and Governance Factors

Table 5 reports our results on the association between measures of abnormal accruals and our 14 governance factors. For our sample of 1,471 firms the mean abnormal accrual is close to zero and the mean absolute value of abnormal accruals is

about six percent of average assets.²⁰ These numbers are similar to prior research (e.g., Larcker and Richardson, 2004).

Three sets of regression results are presented in Table 5 where panel A reports results for the signed abnormal accrual measure and panel B (C) reports results for the sub-sample of firms where abnormal accruals are positive (negative). In panel A, we find that only Active, Block, Insider Appointed, Compensation Mix, and Insider Power are statistically significant for the full sample. However, the signs for Active, and Block are opposite to our expectation. The regression model has an adjusted R^2 of 1.9 percent.

When we split the sample based on the sign of abnormal accruals, we continue to see unexpected associations for firms with positive abnormal accruals (both Active and Board Size have opposite signs to our predictions) and an explanatory power of about 3.3 percent. However, for firms with negative abnormal accruals, we see a much greater explanatory power for the set of governance factors adjusted R^2 is 11.3 percent for this sub-sample. However, two of the four significant measures (Board Size and Anti-Takeover II) exhibit unexpected associations.

Similar to Klein 2002, Jenkins 2002, and Xie, Davidson, Dadalt, 2002, the analyses in Table 5 reveal a modest association between our governance indices and abnormal accruals. The most pronounced association is for firms with negative abnormal accruals and for that sub-sample the presence of activist institutions reduces income decreasing accrual choices and the presence of affiliated directors increases such

²⁰ The sample size used to estimate the regression is 1,471 as opposed to the total sample of 1,484 observations with complete data. The difference in sample size is caused by the deletion of observations in the regression where the absolute value of the studentized residual is greater than four. This approach is used in all of our analyses to mitigate the influence of “outliers.” Less than one percent of the observations are affected by this methodological choice.

behavior.²¹ However, for this sub-sample, we also find the unexpected results that larger boards and firms with supermajority voting and incorporations in states that are management friendly have smaller negative abnormal accruals. Overall, we interpret the results in Table 5 as indicating a very mixed association between abnormal accruals and corporate governance.

4.2 Earnings Restatements

Earnings Restatements, Control Variables and Prior Literature

Earnings restatements are often claimed to be the result of weak governance and there has been considerable accounting and finance research recently examining the impact of various measures of governance on the likelihood of observing earnings restatements or fraud (e.g., Farber, 2004 with board and audit committee characteristics, Dechow, Sloan and Sweeney, 1996, Beasley, 1996 with measures of board characteristics, block-holders and CEO duality, and Peng and Roell, 2003 and Erickson, Hanlon and Maydew, 2004 for measures of executive compensation). We reexamine these findings with a sample of earnings restatements across our broad set of governance indices.

We obtain data on earnings restatements from Huron Consulting (both 10-Q and 10-K restatements that are identified through amended SEC filings). We use an indicator variable, Earnings Restatement, which we set equal to one if the firm reports an earnings restatement related to the fiscal year (or a subsequent fiscal period) for which we have

²¹ We have replicated all of our analyses using the performance matched technique described in Kothari, Leone and Wasley (2005). The inferences from this alternate analysis are similar to those in Table 5 (Active continues to be negatively associated with performance matched abnormal accruals but the adjusted R^2 from this specification is only 0.2 percent). We also examined the relation between our 14 governance factors and the absolute value of abnormal accruals. The explanatory power of the governance factors was 5.1%, and we found significant negative associations for Active, Compensation Mix, Board Size and Anti-Takeover II (all but Active are unexpected negative associations).

governance data, and zero otherwise. For example, firm XYZ has a December 31, 2002 fiscal year end. If XYZ restates its earnings for any of the fiscal periods from January 1, 2002 onwards the Earnings Restatement is set equal to one. For other firms the indicator variable is set equal to zero with the exception that firms who restate earnings in an earlier fiscal period are dropped from the analysis. For example, if firm XYZ had a restatement prior to January 1, 2002 we exclude that observation from our analysis. This leaves us with a sample of 2,094 firms of which 118 restate earnings. We exclude the restatements prior to January 1, 2002 because we cannot be sure that the governance structures we measure have changed in response to the restatement.

Prior research has examined the prediction and the economic consequences of earnings restatements and SEC enforcement actions (e.g., Dechow, Sloan and Sweeney 1996). We incorporate the findings of this prior research to select our control variables that include BM (book-to-market, defined above), Leverage (calculated as total debt (item 9 + item 34) divided by total assets (item 6)), External Financing (calculated as net equity financing, item 108 – item 115 – item 127, plus net debt financing, item 111 – item 114 + item 301, all deflated by beginning market value of equity), Log of market value of common equity, Free Cash Flow (measured as the difference between operating cash flows, item 308, and average capital expenditures over the 3 prior years, item 128) and Acquisitions (calculated as total cash spent on acquisitions during the fiscal period restated, item 129, deflated by beginning market value of equity). BM, Leverage, and Log(Market Cap) are all measured prior to the fiscal period which is restated. All control variables are winsorized at the 2nd and 98th percentiles.

Earnings Restatements and Governance Factors

In our analysis of restatements, we exclude Meetings because the board could be meeting more frequently due to the upcoming earnings restatement. The results in Table 6 indicate that Debt and Insider Power are the only two governance factors that are associated with the likelihood of earnings restatements (pseudo- R^2 is 1.8 percent). When we include the control variables, Debt and Insider Power are still the only two governance factors that are associated with the likelihood of earnings restatements. In both specifications, Debt is positively associated with the likelihood of observing a restatement (opposite of our expectation) and Insider Power has the expected positive sign. The control variables contribute an additional 1.1 percent pseudo- R^2 to the explanatory power beyond the governance factors, whereas governance factors contribute an additional 2 percent pseudo- R^2 beyond the control variables. Since the dependent variable is dichotomous, we also report “hit rates” for five cut-off probabilities (0.1, 0.2, 0.3, 0.4, and 0.5). As might be expected in a setting where the non-restating sample is much larger than the restating sample, the logistic model accurately classifies non-restatement observations, but the classification accuracy for the restatement observations is quite poor. Overall, the results in Table 6 provide little evidence that corporate governance has an impact on accounting restatements.

4.3 Future Operating Performance

Future Operating Performance, Control Variables and Prior Literature

One way to assess the impact of governance structures on firm value is to examine an accounting based measure of future operating performance. For example, Gompers, Ishii and Metrick (2003) find evidence that governance has a positive

association with various measure of future accounting performance. Similar to prior research, we use return on assets (calculated as operating income, Compustat item 178, deflated by average total assets) as our measure of operating performance (ROA). Unfortunately, there is not a well-defined and accepted model of expected operating performance. Prior research has shown that measures of operating performance are very persistent (e.g., Penman, 1992 and Fama and French, 2000). Thus, the natural candidate for expected future operating performance is current operating performance. However, to the extent that governance structures are stable over time and these factors determine the operating, investing and financing activities of the firm, the inclusion of current operating performance is likely to remove the impact of governance that we are trying to estimate. Rather than using current ROA as an expectation model for future performance, we use industry affiliation and firm size for our benchmark (e.g., Gompers, Ishii and Metrick, 2003 and Core, Guay and Rusticus, forthcoming). We use the Log (Market Capitalization) as our measure of firm size and the median two-digit industry ROA as our measure of industry performance. Industry-adjusted ROA is computed by subtracting the median industry ROA from the firm ROA.

Future Operating Performance and Governance Factors

The results for future operating performance analysis are presented in Table 7. In the governance factors only specification, we find that Active, Compensation Mix, Insider Power, Board Size, and Anti-Takeover II have a positive association, whereas Anti-Takeover I and Debt have a negative association with future operating performance. The adjusted R^2 for this specification is 14.2 percent. However, it is important to note

that this level of explanatory power includes four factors that have unexpected signs (Debt, Insider Power, Board Size, and Anti-Takeover II).²²

One potential problem with the specification that only includes governance variables is that the implicit benchmark for ROA is simply the mean ROA across the sample of observations. A potentially more sophisticated benchmark may be produced when we control for industry and Log (Market Cap.). In this expanded specification, we find that Block, Compensation Mix, Lead Director, and Anti-Takeover II are positively associated with future ROA and Board Size and Busy Directors are negatively associated with ROA. With the exception of Anti-Takeover II, each of these governance factors has the expected sign. The inclusion of the control variables increases the explanatory power by an additional 5.9 percent, whereas the inclusion of the governance variables to the model that only includes controls increases the explanatory power by 4.7 percent.²³ Given the fairly large number of statistically significant governance indices with expected signs and the moderate level of explanatory power associated with these indices, we interpret the results as indicating a statistical and substantive association between corporate governance and future operating performance.

²² The sign on Compensation Mix is somewhat ambiguous when future operating performance is the outcome variable. We assume that “bad” governance is increasing in Compensation Mix (more accounting-based compensation and less stock-based compensation). However, if an executive is paid based on accounting performance, we would expect the executive to take actions to increase accounting performance (perhaps at the cost of decreasing stock price). Thus, our expectation for the sign of Compensation Mix is positive when operating performance is the outcome variable.

²³ We use different samples for the results tabulated in Table 7 for the governance only, controls only, and governance and controls specifications, due to data availability of the necessary variables. Therefore, the tabulated R^2 s are not directly comparable. When we use the same sample for all three specifications, the R^2 of the governance and controls specification is 20.5%. The incremental R^2 by including the control (governance) variables is 5.0% (4.9%).

4.4 Future Stock Returns

Future Stock Returns, Control Variables and Prior Literature

Our final dependent variable is Alpha (excess stock returns). Specifically, for each firm in our sample we obtain monthly stock returns (RET) from the CRSP files from the first month of the 2003 fiscal year through to December 2004. For example, for a firm with a December 31, 2002 year end, our returns cover the January 2003 to December 2004 period. These monthly returns are regressed on the standard Fama-French monthly factor returns (MKT, SMB, HML, and UMD). The intercept from the following regression (estimated at the firm level) is our estimate of future excess returns:

$$RET_t = \alpha + \beta_{MKT}MKT_t + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{UMD}UMD_t + \varepsilon_t$$

Since the dependent variable, alpha, is excess returns, we do not include any additional control variables in the subsequent regression estimation. Our analysis of future abnormal stock returns rests on an assumption about market efficiency. If stock prices incorporate beliefs about the potential benefit of certain governance structures then we should observe no association between our governance factors and future excess stock returns. For governance structures to be related to future excess returns it must be through either (i) inefficiency in the ability of market participants to price the associated benefits/costs or (ii) systematic unexpected shocks to operating performance from these governance structures. Gompers, Ishii and Metrick (2003) examine the relation between a set of anti-takeover provisions and excess returns for a sample of S&P 1500 firms during the 1990s and find higher future excess stock returns for “democracy” firms who have fewer anti-takeover provisions. Further work by Bebchuk and Cohen (2005) suggest that this relation is, in large part, due to staggered boards that are created by

corporate charter. While Gompers, Ishii and Metrick (2003) are careful to note that the association between anti-takeover provisions and stock returns is not suggestive of a trading strategy, subsequent research has challenged both the strength of this relation and the interpretation. For example, Cremers and Nair (2003) find that the impact of governance is very sensitive to the threshold cutoff used to classify firms into “democracy” and “dictator” groups. Core, Guay and Rusticus (forthcoming) find very little evidence to suggest that the relation is attributable to unexpected performance shocks, raising the possibility that the relation may be indicative of a market misunderstanding of the importance of governance structures. In fact, Bebchuk, Cohen and Ferrell (2004) suggest that the importance of poison-pills changed significantly during the earlier part of the 1990s and this had consequences for firm valuations.

Future Stock Price Performance and Governance Factors

Table 8 reports our regression analysis for future excess stock returns. In our regression analysis we find that Insider Appointed, Compensation Mix, Lead Director, Debt and Insider Power are significantly associated with Alpha. Of these, Lead Director, and Insider Power are significant in the predicted direction. The adjusted R^2 is 2.0 percent and is similar to the explanatory power of other studies that use excess stock returns as the dependent variable (e.g., Sloan, 1996). Thus, similar to the operating performance results, we find some evidence that our corporate governance indices are associated with future excess returns.

5. Extensions

5.1 Exploratory recursive partitioning analyses

One problem with the traditional regression approach is that a simple linear structure cannot capture the likely complex nonlinearities and interactions among the independent variables. Moreover, absent clear theory interactions are exceedingly difficult to specify a priori, and tend to produce high levels of multi-collinearity between the main effects and interaction variables. As an alternative methodological approach, we also analyze our data with exploratory recursive partitioning using the well-known CHAID (or Chi-square Automatic Interaction Detection) algorithm (e.g., Kass, 1980, Biggs, de Ville, and Suen, 1991). Recursive partitioning models are constructed by successively splitting the data into increasingly homogeneous subsets. At each step, the independent variables are examined and the one that gives the “best” split is selected. The splitting process is terminated based on selected traditional “stopping rules.” Recursive partitioning ultimately produces a tree-like structure that allows nonlinear and interactive associations between the dependent variable and a set of independent variables.²⁴ Although recursive partitioning has an exploratory nature, it is important to use multiple analysis methodologies for complex research problems in order to insure that the results are not simply due to method variance. We describe the results of the recursive partitioning analysis in detail for the directional abnormal accrual variable, but

²⁴Another advantage of recursive partitioning is that it is more straightforward to uncover whether governance constructs appear to be complements or substitutes for explaining the dependent variable. Prior research has attempted to look at such complementarities across governance structures in a variety of settings. Examples include Brickley, Coles and Terry (1994), Malette and Fowler (1992), Sundaramurthy, Mahoney and Mahoney (1997) who find board characteristics relate to the adoption of anti-takeover devices, and Conyon and Florou (2004) who find that CEO compensation and stock holding of directors impacts investment decisions made by managers close to retirement age.

for the sake of brevity, we summarize the recursive partitioning results for our other outcome variables alongside the OLS results in Tables 5 - 8.

The recursive partitioning results for abnormal accruals are presented in Figure 1 (and summarized in the last column of Table 5). Recursive partitioning analysis yields somewhat stronger results (adjusted R^2 of 4.51%). This is not surprising given that recursive partitioning allows nonlinear and interactive associations between the dependent variable and a set of independent variables. As illustrated in Figure 1, Anti-Takeover II is an important governance factor in explaining abnormal accruals (level one in Figure 1). This is the first variable in the partitioning and the decision model brings out the interactions between the variables in the further levels of the diagram. Abnormal accruals are higher for companies that have supermajority voting provisions and that are incorporated in Pennsylvania, Ohio, Wisconsin, or Massachusetts. For the rest of the companies, Active is an important governance factor in explaining abnormal accruals (level two in Figure 1).

For companies that have lower Anti-Takeover II (no supermajority provision and not incorporated in one of the aforementioned states), but with a higher number of activist shareholders, higher percentage of activist holdings and a lower percentage of outsider holdings, abnormal accruals are higher (contrary to what one would expect if abnormal accruals is a bad outcome and activists are expected to provide additional monitoring). As we move further down the figure, Board Size is a significant governance factor that explains abnormal accruals, but only for the sub-sample of firms with lower Anti-Takeover II and higher Active values (level three in Figure 1). For such firms, abnormal accruals are non-linearly associated with Board Size. Abnormal accruals are

higher for medium Board Size, and lower for low and high Board Size in this sub-sample of firms. Of the firms that belong to high Board Size sub-sample, Insider Appointed is significantly associated with the level of abnormal accruals for those with high Board Size (level four in Figure 1).²⁵ Again, this association is non-linear. Finally, Old Directors is statistically significant for firms with moderate levels of insider appointed directors, but with a non-linear association.

The recursive partitioning results for directional accruals are generally consistent with the regression estimates in Table 5 (panel A). Active, Insiders Appointed, Old Directors, Board Size, and Anti-Takeover II are able to explain cross-sectional variation in our abnormal accrual measure. Of these variables, Insider Appointed, Old Directors, and Board Size have a non-linear association with abnormal accruals. Furthermore, contrary to our expectation and consistent with the regression analysis, Active is positively associated with abnormal accruals. The recursive partitioning results of sub-samples of positive and negative accruals suggest that the regression results in panels B and C of Table 5 accrual are weak. For example, Debt is the only statistically significant variable with the expected sign for the positive accrual sub-sample and both statistically significant variables for the negative accrual sub-sample have unexpected signs.

The recursive partitioning analysis for accounting restatements (Table 6) reveals that Debt and Board Size are the two significant governance indices in the governance only specification. However, both variables exhibit signs opposite to our expectations. When we include the control variables, Insider Appointed (Debt) has an unexpected

²⁵ It is important to highlight that regression analysis assumes that the same model is applicable to the entire sample of firms, whereas the recursive partitioning identifies a specific set of explanatory variables for each sub-sample. For example, Insider Appointed is relevant for 761 of the total sample of 1,471 firms.

negative (positive) association with restatement, and Insider Power has a non-linear association with restatements. Similar to the logistic regression results, the recursive partitioning analysis finds virtually no evidence that restatements are associated with corporate governance.

The recursive partitioning analysis for future operating performance (with and without controls) is somewhat consistent with the previous regression results (Table 7). The explanatory power of the governance only specification is 16.2 percent with Active and Compensation Mix (Debt) being positively (negatively) associated with future ROA. Similar to the regression results, the sign for Debt is opposite to our expectation. While the results vary with the methodological approach, we find consistent evidence that Active and Compensation Mix have a statistical and substantive association with future operating performance.

Finally, the recursive partitioning results confirm some of the regression results for future excess returns (Table 8). The main differences are that Block is also significant (and has a non-linear association), and Debt and Insider Power are no longer significant. Compensation Mix and Lead director are again statistically associated with future excess stock price returns. The explanatory power from the recursive partitioning analysis is 2.7 percent.

Overall, the regression and recursive partitioning results are consistent with each other for our outcome variables. This comparative evidence is important because it provides some evidence that our results are not substantially affected by method variance (i.e., whether methodologies produce substantively different results and interpretations).

5.2 Limited Sample Period

One potential problem with our analysis is that we use only one year of data and that time period coincides with significant regulatory reform (e.g., Sarbanes Oxley Act and new exchange listing requirements). This observation raises some concern about the power of our statistical tests and the ability to generalize our results. To assess the impact of these regulatory changes, we obtained time series data for various subsets of our governance measures and examined the change in these measures over time. It was not possible for us to examine all of the data obtained from Equilar Inc. and True Course Inc. as these entities only collected the necessary data from 2002 onwards. Instead, we examined other data sources to look at changes in a variety of governance structures from 1990 to early 2000.

Our first analysis examines the persistence of the governance index developed by Gompers, Ishii and Metrick (2003). This index is comprised of 24 indicators reflecting the quality of shareholder rights and is increasing in the weakness of these rights. For the 649 firms that are covered on all seven IRRC reports (1990, 1993, 1995, 1998, 2000, 2002 and 2004) the mean index is very stable starting at 10.3 in 1990 and only slowly decreasing to 9.1 in 2004. Furthermore, the correlation over time between reports is 0.98. If we restrict our analysis to the 1,260 firms covered on the 2000, 2002 and 2004 IRRC reports, the over time correlation between 2000 and 2004 is 0.91 and between 2002 and 2004 is 0.97.²⁶ Since anti-takeover and shareholder rights provisions are very stable

²⁶ This result is perhaps not surprising given that a large number of the components of this governance index were set at the time a company was incorporated (e.g., super-majority requirements and staggered board classifications).

inter-temporally, our results for similar variables should not be confounded with regulatory changes.

As a second analysis, we examined the persistence of various board specific measures including the size of the board and audit and compensation committees along with the composition of the board and those committees. This data is available from IRRC for the years 1996 to 2002 for the full board and from 1998 to 2002 for the various sub-committees of the board. For the sample of 733 firms that had data in all years, board size has remained very stable through time (the average board in 1996 had 10.7 directors and in 2002 this was 10.4 directors). The over time correlation in board composition (i.e., the fraction of the board that is comprised of independent outside directors) is 0.85 and similar stability is found with the size and composition of both the audit and compensation committees. These results suggest that our analysis of board variables is not likely to be completely confounded by regulatory changes.

We also obtained analyst ratings of board effectiveness from The Corporate Library (TCL) for 1,504 firms in 2002, 1,712 firms in 2003 and 1,934 firms in 2004. The over time rank correlation in the ratings is 0.93 between 2003 and 2004 suggesting that even qualitative assessments of governance quality are temporally stable in the most recent years. However, the over time rank correlation between 2002 and 2003 is only 0.40. The low correlation for the TCL ratings from 2002 to 2003 is caused by a change in the algorithm that TCL used in generating their board effectiveness rating, rather than changes in the underlying structural indicators of governance (especially as our analysis above of the IRRC data of board structures and shareholder rights suggest that these measures are very stable year over year). Our conversations with TCL and other rating

agencies (such as ISS and GMI) suggest that the algorithm used to generate overall ratings is modified in response to feedback from the analysts generating the reports. These modifications either alter the weight of sub-categories of governance measures or change the set of included/excluded measures from year to year.²⁷

Our analysis of the stability of governance measures is consistent with the recent study by Linck, Netter and Yang (2005) that examines 6,931 corporate boards over the period 1990 to 2004. In general, they find that board structure has been surprisingly stable over the last 15 years. For example, the fraction of executive directors on a board has decreased from about 37 percent in 1990 to 34 percent in 2001 and about 31 percent in 2004. This decrease is not economically significant given that the mean board size over the period is about eight members. Linck, Netter and Yang (2005) also find that board size has remained very stable at about eight directors for their full sample, and that the fraction of firms with a dual CEO-Chair has remained relatively constant at around 55 percent. Linck, Netter and Yang (2005) do find evidence of increased director turnover around the Sarbanes Oxley Act. However, it is important to note that most of the observable/structural indicators of governance (e.g., board composition, board size and dual CEO-Chair) do not change. Overall, the structural indicators of governance that are the focus of our empirical analysis have not changed significantly over time or around the Sarbanes Oxley Act. Our analysis of governance data for the single time period from June, 2002, to May, 2003, is likely to be representative of earlier time periods.

Furthermore, given that there is considerable cross-sectional variation in our governance measures during the period we examine, our statistical analyses are likely to have

²⁷ We also obtained data from Governance Metrics International for the Standard and Poors 500 firms in 2002, 2003 and 2004. The over time rank correlation between 2003 and 2004 is 0.63 and between 2002 and 2003 is 0.64.

sufficient power to detect the association between measures of corporate governance and various accounting outcomes.

5.3 Concerns about Endogeneity

Our methodological approach essentially involves assessing the relation between an accounting outcome variable and a set of choices for organizational structure (i.e., the governance constructs). Since the regressor variables are endogenous choice variables, the exogenous determinants of these choice variables are also likely to affect the outcome variable. If the determinants of the regressor (or right-hand-side) variables are not included in the statistical model being estimated, the regressor variables are correlated with the true (but unobserved) error term in the equation. In this setting, ordinary least squares (or logistic) parameter estimates will be inconsistent due to the well-known correlated omitted variables problem. Most empirical accounting research is confounded to at least some degree by the endogenous nature of the predictors in the statistical model.²⁸

The implication for archival corporate governance research is that it is very difficult to make causal inference from cross-sectional studies of these endogenously chosen governance characteristics and any outcome variable (e.g., Demsetz and Lehn, 1985). An alternative perspective is that firms are dynamically learning and moving

²⁸ The standard textbook solution to endogeneity is to implement some type of instrumental variables estimation procedure. In particular, a set of variables that are assumed to be exogenous is selected and then n-stage least squares estimation is used to estimate the coefficients in the regression model. This solution to endogeneity works if the researcher can find instrumental variables that are correlated with the endogenous regressor, but uncorrelated with the error in the structural equation. In most applied settings, it is extremely difficult to identify such instrumental variables. Moreover, Larcker and Rusticus (2005) analytically and numerically show that ordinary least squares estimates typically exhibit better statistical properties than two-stage least squares estimates when the selected “instrumental variables” do not precisely conform to the textbook definition for instrumental variables (i.e., the instrumental variables are weak predictors of the endogenous variables and the instrumental variables are themselves partially endogenous). As a result, it will be difficult to use instrumental variable methods to address concerns about endogeneity in our setting.

toward their optimal governance structure (i.e., most firms deviate from the optimal choice at a point in time). As discussed in Ittner, Lambert, and Larcker (2003), this implies that observed cross-sectional differences in governance structure provide a method for assessing the accounting and economic consequences of these factors. In order to implement this approach, we assume that firm size (measured as the natural logarithm of the market value of equity) and industrial classification (measured using two-digit SIC codes) are the two primary exogenous determinants of corporate governance. Thus, the residuals produced from a regression of each governance index on firm size and industry should be a measure of how far a firm deviates from the “optimal” governance structure. The key assumption for this approach to be valid is that the systematic part of the regression is the appropriate governance choice for the firm. If we find similar results after adjusting for the systematic part of governance choices, this will suggest that the results in Tables 5 to 8 are not completely confounded by econometric problems induced by endogenous regressor variables.

We estimate the statistical association of each accounting outcome variable with a variable that takes on the value of the governance factor residual if it is positive and a value of zero otherwise (governance⁺) and another variable that takes on the value of the governance factor residual if it is negative and a value of zero otherwise (governance⁻). We separate the residual into two variables in order to allow for a different impact of firms that have higher or lower governance than similar firms. For example, less governance relative to the benchmark may produce poor performance, but more governance than the benchmark may have no relation with performance. We estimate four regressions (one for each accounting outcome variable) with 28 variables for the 14 governance factors.

The results (not tabulated) for the accrual analysis again exhibit the very mixed outcomes and the restatement analysis provides virtually no evidence suggesting an association between corporate governance and accounting restatements. These results are very consistent with interpretations from the results in Tables 5 and 6. The analysis of future operating performance produces results similar to those in Table 7. One interesting outcome produced by this expanded analysis is that most of the negative residuals for the governance indices are statistically significant and have the expected sign. This indicates that operating performance is lower for firms that have governance that is below the structure implied by a benchmark derived from firm size and industry. Finally, the results for future excess stock price performance are also similar to those reported in Table 8. Thus, there is evidence consistent with a statistical and substantive association between corporate governance and future operating and stock price performance, but little systematic evidence for accounting manipulations. Moreover, these results do not appear to be completely confounded by the endogeneity of the corporate governance indices.

6. Summary and Conclusions

The relation between corporate governance and managerial behavior and organizational performance is of fundamental importance to practitioners, academics and policy makers. Assumptions and strongly held beliefs about the importance of governance are shaping the current regulatory climate for the design of governance structures. However, a consistent set of results is yet to emerge from the academic literature. We suspect that these mixed results are partially the result of governance measures that have a very modest level of reliability and construct validity.

In this study, we develop a new set of indices from a comprehensive set of structural indicators of corporate governance. In order to mitigate measurement error and develop a parsimonious representation for the construct of corporate governance, we use principal component analysis and develop 14 multi-indicator indices from 39 individual governance indicators. These indices are an initial step in the process of developing reliable and valid indicators for the complex construct termed corporate governance. We then assess the ability of these indices to explain abnormal accruals, accounting restatements, future operating performance, and future stock returns. We find that our governance indices are related to future operating performance and excess stock returns. However, these indices have a very modest and mixed association with abnormal accruals and almost no relation to accounting restatements.

As with all somewhat exploratory studies, it is important to be explicit about the inherent limitations of our research. First, we only analyze a single year of data and this potentially restricts our ability to generalize to other periods. Although our data are current, the time period of data collection coincides with the Sarbanes-Oxley Act and changes in exchange listing requirements. If this regulatory change caused firms to adopt greater conformity in governance mechanisms, this will reduce cross-sectional variation in our measures and decrease the power of our statistical tests. However, our analysis of other related governance data does not indicate substantial changes in structural measures of corporate governance in the time period surrounding the Sarbanes Oxley Act. Thus, we believe that our statistical analysis has sufficient power to detect the association between corporate governance and accounting outcome measures.

Second, corporate governance characteristics and managerial behavior are endogenous variables and this has the potential to produce a variety of serious econometric problems. Absent clear theory and the identification of strictly exogenous instruments it is very difficult to appropriately incorporate the endogenous relations into our analysis. We attempt to mitigate concerns about endogeneity by using the governance residuals estimated using firm size and industry as predictor variables. Although this approach does not completely resolve concerns about endogeneity, this expanded analysis generates results that are similar to the results without any control for endogeneity.

Third, it may not be possible to capture the association between corporate governance and accounting outcomes using standard linear models. For example, a linear model cannot capture the likely complex nonlinearities and interactions among the independent variables. In order to assess the impact of method variance on our results, we also use exploratory recursive partitioning to analyze the association between corporate governance and accounting outcomes. The results are very similar for both linear model and recursive partitioning approaches and we do not believe that our interpretations are affected by method variance.

Fourth, our empirical analysis may not adequately capture economic determinants of accounting outcomes, or even the accounting outcomes themselves. Furthermore, some of the key dimensions of the complex corporate governance construct may be missing from our analysis. Thus, our results are subject to the standard criticisms related to correlated omitted variables and measurement error. We have included virtually all variables from prior research that have been shown to be associated with each of our

dependent variables, used the most contemporary measures for our outcome variables, and analyzed a very comprehensive set of governance indicators. Nevertheless, there is an unknown degree of measurement error and correlated omitted variable bias in our empirical results.

Fifth, despite a careful attempt to sample the domain of the corporate governance construct and assess the measurement properties of indices, we do not have perfect measures of corporate governance. Although this is a limitation, it is important to note that prior empirical work has provided almost no discussion of their selected measures (e.g., Gompers, Ishii and Metrick 2003 and Brown and Caylor 2004). Our paper is an initial attempt to develop measures of the construct that is termed corporate governance. Obviously, much measurement work remains to be done to develop reliable and valid measures that can subsequently be used by researchers.

Finally, similar to most prior work, our study primarily focuses on the number of statistically significant governance coefficients with the expected sign. While statistical significance is necessary, it is also crucial to demonstrate that the explanatory power of the predictor variables is large enough to draw substantive conclusions about corporate governance. The minimum level of R^2 that must be exceeded before drawing substantive conclusions is complicated because this benchmark will vary with the complexity of the research question and the amount of prior research on a topic. However, given the strong substantive interpretations contained in most corporate governance research, it would be useful for researchers to begin a constructive debate regarding the role of explanatory power in this type of work.

References

- Ashbaugh, H., D. W. Collins, R. LaFond. 2004. The effects of corporate governance in firms' credit ratings. Working Paper, University of Iowa.
- Bartov, E., F. A. Gul, and J. S. L. Tsui. 2001. Discretionary accruals models and audit qualifications. *Journal of Accounting and Economics* 30: 421-452.
- Beasley, M. 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *Accounting Review* 71: 443-465.
- Bebchuk, L. A., and A. Cohen. 2005. The costs of entrenched boards. *Journal of Financial Economics*, 78, 409-433.
- Bebchuk, L. A., A. Cohen, and A. Ferrell. 2004. What matters in corporate governance? Working paper, Harvard Law School.
- Bernard, V. L., and D. J. Skinner. 1996. What motivates managers' choice of discretionary accruals? *Journal of Accounting and Economics* 22: 313-325.
- Bhagat, S. 2004. Governance and performance. Working paper, University of Colorado.
- Bhagat, S., and B. Black. 2002. The non-correlation between board independence and long-term firm performance. *Journal of Corporation Law* 27(2): 231-273.
- Biggs, D., B. de Ville, and E. Suen. 1991. A method of choosing multiway partitions for classification and decision trees, *Journal of Applied Statistics* 18(1): 49-62.
- Bollen, K. A.. 1989. *Structural equations with latent variables*, New York: Wiley.
- Brickley, J., J. Coles and R. Terry. 1994. Outside directors and the adoption of poison pills. *Journal of Financial Economics* 35: 371-390.
- Brown, L. and M. Caylor. 2004. Corporate governance and firm performance. Working paper, Georgia State University.
- Bushman, R. M., and A. J. Smith. 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics* 32: 237-334.
- Byrd, J. and K. Hickman. 1992. Do outside directors monitor managers? Evidence from tender offer bids. *Journal of Financial Economics* 32: 195-207.
- Conyon, M. J., and A. Florou. 2004. Does governance quality mitigate horizon effects? Investment patterns surrounding CEO departures. Working Paper, University of Pennsylvania.

Core, J. E., W. R. Guay, and T. O. Rusticus. forthcoming. Does weak governance cause weak stock returns? An examination of firm operating performance and analysts' expectations. *Journal of Finance*.

Core, J. E., R. W. Holthausen, and D. F. Larcker. 1999. Corporate governance, chief executive officer compensation and firm performance. *Journal of Financial Economics* 51: 371-406.

Cremers, M., and V. B. Nair. 2003. Governance mechanisms and equity prices. Working Paper, Yale School of Management.

Daines, R., and M. Klausner. 2001. Do IPO charters maximized firm value? Anti-takeover provisions in IPOs. *Journal of Law, Economics and Organization* 17: 83-120.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70: 193-225.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1996. Causes and consequence of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research* 13: 1-36.

DeFond, M. L., and K. R. Subramanyam. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics* 25: 35-67.

Demsetz, H., and K. Lehn. 1985. The structure of corporate ownership: Causes and consequences. *Journal of Political Economy* 93: 1155-1177.

Easton, P. D., and S. J. Monahan. 2005. An evaluation of accounting-based measures of expected returns. *The Accounting Review*, 80, 501-538.

Erickson, M., M. Hanlon and E. Maydew. 2004. Is there a link between executive compensation and accounting fraud? Working paper, University of Chicago.

Fama, E., and K. French. 2000. Forecasting profitability and earnings. *Journal of Business* 72: 161-175.

Farber, D. 2004. Restoring trust after fraud: Does corporate governance matter? Working paper, Michigan State University.

Ferris, S. P., M. Jagannathan, and A.C. Pritchard. 2003. Too busy to mind the business? Monitoring directors with multiple board appointments. *Journal of Finance* 58: 1087-1111.

Frankel, R. M., M. F. Johnson, and K. K. Nelson. 2002. The relation between auditor's fees for non-audit services and earnings management. *The Accounting Review* 77 (Supplement): 71-105.

- Gompers, P. A., J. L. Ishii, and A. Metrick. 2003. Corporate governance and equity prices. *Quarterly Journal of Economics* 118: 107-155.
- Gompers, P. A., J. L. Ishii, and A. Metrick. 2004. Incentives vs. control: An analysis of U.S. dual-class companies. Working paper, University of Pennsylvania.
- Grice, J. W. and R. J. Harris, 1998. A comparison of regression and loading weights for the Computation of Factor Scores. *Multivariate Behavioral Research* 33(2): 221-247.
- Hall, B., and J. Liebman. 1998. Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics* 113: 653-691.
- Harris, M. and A. Raviv. 2005. A theory of board control and size. Working paper, Graduate School of Business, University of Chicago.
- Hermalin, B. and M. Weisbach. 1998. Endogenously chosen boards of directors and their monitoring the CEO. *American Economic Review* 88: 96-118.
- Ittner, C. D., R. A. Lambert, and D. F. Larcker. 2003. The structure and performance consequences of equity grants to employees in new economy firms. *Journal of Accounting and Economics* 34: 89-127
- Jenkins, N. T. 2002. Auditor independence, audit committee effectiveness and earnings management. Working paper, Washington University.
- Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29: 193-228.
- Kass, G.V. 1980. An exploratory technique for investigating large quantities of categorical data," *Applied Statistics* 29(2): 119-127.
- Klein, A. 1998. Firm performance and board committee structure. *Journal of Law and Economics* 41: 275-303.
- Klein, A. 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33: 375-400.
- Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39, 163-197.
- Larcker, D.F. 2003. Discussion of 'Are executive stock options associated with future earnings'. *Journal of Accounting and Economics* 36: 91-103.

Larcker, D.F., and S. A. Richardson. 2004. Fees paid to audit firms, accrual choices and corporate governance. *Journal of Accounting Research* 42: 625-658.

Larcker, D. F. and T. O. Rusticus. 2005. On the use of instrumental variables in accounting research. Working paper, University of Pennsylvania.

Leblanc, R., and J. Gillies. 2005. Inside the boardroom: How boards really work and the coming revolution in corporate governance. J W Wiley Publishers.

Linck, J. S., J. M. Netter, and T. Yang. 2005. Effects and unintended consequences of the Sarbanes-Oxley Act on corporate boards. Working paper, University of Georgia.

Malette, P., and K. L. Fowler. 1992. Effects of board composition and stock ownership on the adoption of 'poison pills'. *Academy of Management Journal* 35: 1010-1035.

McNichols, M. F. 2000. Research design issues in earnings management studies. *Journal of Accounting and Public Policy* 19: 313-345.

McNichols, M. F. 2002. Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77(Supplement): 61-69.

Morck, R., A. Shleifer, and R. W. Vishny. 1988. Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics* 20: 293-315.

Nunnally, J. *Psychometric Theory* (New York: McGraw Hill, 1967).

Penman, S. H. 1992. Return to fundamentals. *Journal of Accounting, Auditing and Finance* 7: 465-483.

Peng, L., and A. Roell. 2003. Executive pay, earnings manipulation and shareholder litigation. Working paper, Baruch College and Princeton University.

Shleifer, A. and R. W. Vishny. 1997. A survey of corporate governance. *Journal of Finance* 52 (2): 737-783.

Sloan, R. G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71, 298-315.

Sundaramurthy, C., J. M. Mahoney, and J. T. Mahoney. 1997. Board structure, anti-takeover provisions, and stockholder wealth. *Strategic Management Journal* 18: 231-245.

Xie, B., W. N. Davidson III, and P. J. Dadalt. 2002. Earnings management and corporate governance: The roles of the board and the audit committee. Working paper, Southern Illinois University.

Yermack, D., 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 40: 185-211.

Figure 1

Recursive partitioning analysis for abnormal accruals

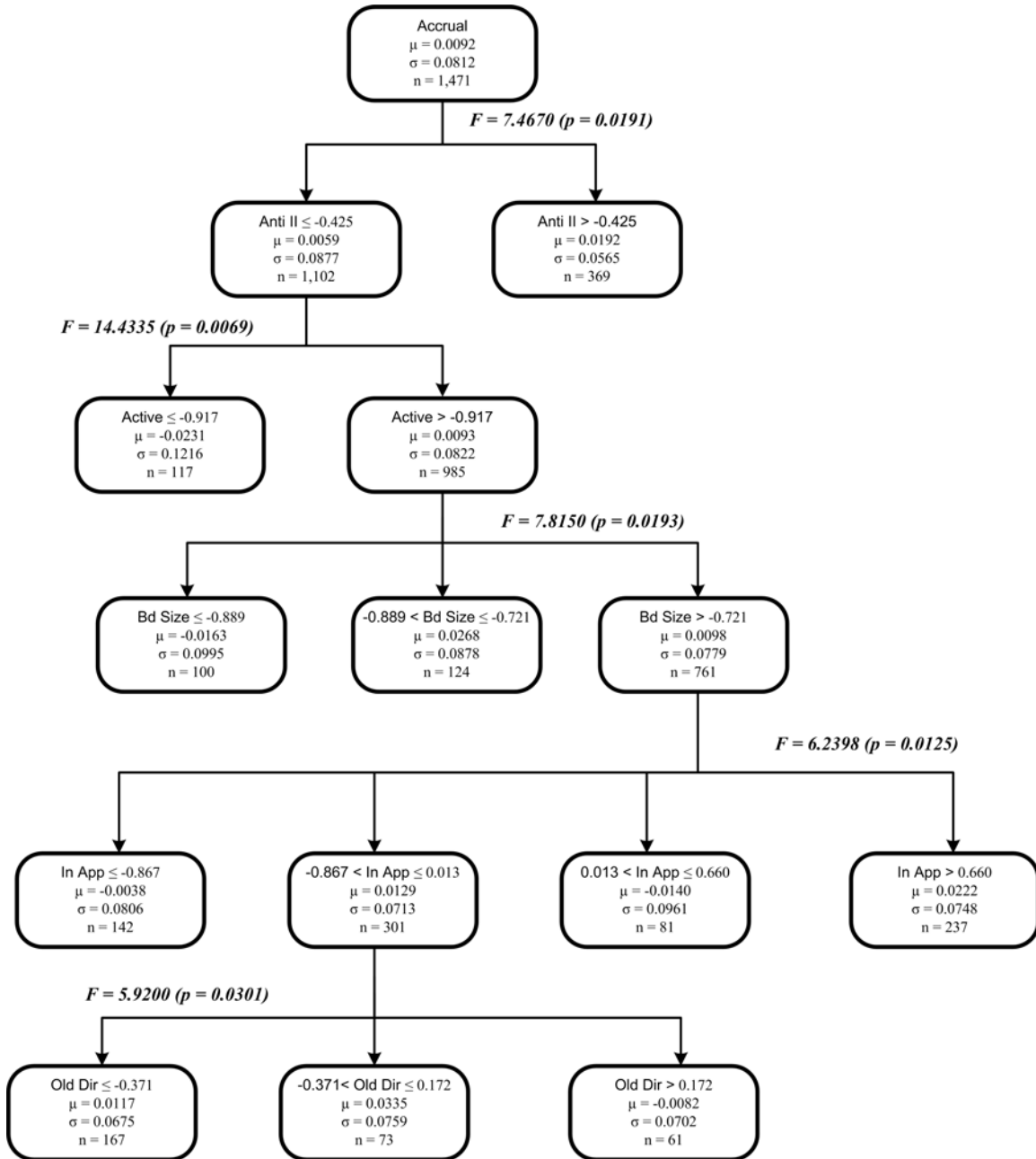


Table 1

Industry composition and comparison of our sample of 2,106 firm observations for the fiscal year ending 06/30/2002 through 05/31/2003 for which corporate governance information from Equilar and Shark Repellent is available.

Panel A: Industry Composition

Two-digit SIC	Industry	Number	Percent of Sample	Compustat Composition
1	Crops	2	0.1	0.2
7	Agriculture Services	2	0.1	0.1
10	Ores	6	0.3	1.2
12	Coal	5	0.2	0.2
13	Oil & Gas	55	2.6	4.0
14	Quarry	5	0.2	0.2
15	Building – Light	9	0.4	0.6
16	Building – Heavy	4	0.2	0.2
17	Construction	3	0.1	0.3
20	Food	21	1.0	1.9
21	Tobacco	5	0.2	0.1
22	Textile Mill	6	0.3	0.7
23	Apparel	10	0.5	0.9
24	Lumber	11	0.5	0.4
25	Furniture	10	0.5	0.5
26	Paper	17	0.8	0.8
27	Printing	25	1.2	1.2
28	Chemicals	186	8.8	5.0
29	Petroleum	12	0.6	0.4
30	Rubber	15	0.7	1.1
31	Leather	6	0.3	0.2
32	Stone	9	0.4	0.6
33	Metal Work – Basic	29	1.4	1.1
34	Metal Work – Fabrication	22	1.0	1.4
35	Industrial	96	4.6	5.2
36	Electrical	127	6.0	5.5
37	Transport – Equipment	39	1.9	1.6
38	Instruments	106	5.0	4.7
39	Misc. Manufacturing	17	0.8	1.0
40	Railroad	8	0.4	0.2
42	Motor freight	12	0.6	0.6
44	Water Transport	8	0.4	0.3
45	Air Transport	15	0.7	0.6
47	Transport – Services	11	0.5	0.3
48	Communications	69	3.3	3.8
49	Utilities	75	3.6	3.0
50	Durables – Wholesale	31	1.5	2.3

Two-digit SIC	Industry	Number	Percent of Sample	Compustat Composition
51	NonDurables – Wholesale	17	0.8	1.4
52	Garden	5	0.2	0.2
53	General Stores	15	0.7	0.6
54	Food Stores	9	0.4	0.6
55	Auto Dealers	13	0.6	0.3
56	Apparel – Retail	30	1.4	0.6
57	Home Equipment	15	0.7	0.5
58	Eating	20	0.9	1.4
59	Misc. Retail	45	2.1	1.7
60	Depositories	192	9.1	7.9
61	Non-depositories	14	0.7	1.5
62	Brokers	25	1.2	1.0
63	Insurance	74	3.5	2.0
64	Ins Agents	15	0.7	0.5
65	Real Estate	8	0.4	1.3
67	Trusts	107	5.1	6.9
70	Hotels	7	0.3	0.5
72	Personal Services	6	0.3	0.3
73	Business Services	284	13.5	11.0
75	Auto Repair	2	0.1	0.2
78	Movies	5	0.2	0.9
79	Amusements	16	0.8	1.1
80	Health	34	1.6	1.7
81	Legal	1	0.0	0.0
82	Educational	5	0.2	0.3
83	Social	3	0.1	0.2
87	Engineering – Retail	45	2.1	1.8
99	Nonclassifiable	5	0.2	1.0

Panel B: Comparison of sample firms with all firms on COMPUSTAT

Variable	Sample Firms	All Firms	Test of Difference
<i>Log(Market Cap.)</i>	6.467	6.081	11.41***
<i>ROA</i>	0.037	0.017	4.24***
<i>BM</i>	0.674	0.767	5.40***
<i>Profit Margin</i>	0.045	0.020	2.69***
<i>Sales Growth</i>	0.047	0.041	0.66
<i># Analysts Following</i>	4.95	3.84	8.92***

*, **, *** indicates significance at the 10%, 5% and 1% respectively.

For our sample of 2,106 firms with available governance data we compare difference in firm characteristics to the complete sample of 4,101 firms with available data from I/B/E/S and Compustat for the following measures:

Log(Market Cap.) is the natural log of *Market Cap.* which is the market value of equity of the firm at the end of 2002 fiscal year (Compustat data #25 * data #199).

ROA is return on average total assets for the 2002 fiscal year, using income from operations (Data #178).
BM is the book-to-market ratio computed at the end of fiscal 2002. It is calculated as the ratio of book value of equity (Data #60) to Market Cap. This is computed only for firms with positive book values.
Profit Margin is the ratio of operating income (Data #178) to total sales (Data #12) measured for the 2002 fiscal year.

Sales Growth is the percentage change in sales (Data #12) during fiscal 2002.

Analysts Following is the number of analysts releasing an annual earnings forecast for the 2002 fiscal year.

Financial statement variables are winsorized to be no greater than one in absolute value, with the exception of *BM* that is winsorized at the extreme two percentiles (i.e., values less (greater) than the 2nd (98th) percentile are set equal to the value of the 2nd (98th) percentile).

Table 2
Descriptive statistics for our vector of corporate governance variables for a sample of 2,106 firms for the fiscal year ending 06/30/2002 through 05/31/2003.

Panel A: Descriptive statistics

Variable	Var. Type	Mean	Std. Dev.	Q1	Median	Q3
<u>Board Variables</u>						
<i># AC Meetings</i>	CNT	6.33	2.59	4	6	8
<i># CC Meetings</i>	CNT	3.92	2.17	2	4	5
<i># Board Meetings</i>	CNT	7.31	2.98	5	7	9
<i>CC Size</i>	CNT	3.52	1.15	3	3	4
<i>AC Size</i>	CNT	3.69	0.99	3	3	4
<i>Board Size</i>	CNT	8.78	2.75	7	8	10
<i>% Board Inside</i>	C	20.03	10.36	12.5	16.67	25
<i>% AC Affiliated</i>	C	10.47	18.38	0	0	25
<i>% CC Affiliated</i>	C	15.62	24.03	0	0	33.33
<i>AC Chair Affiliated</i>	I	0.07	0.26	0	0	0
<i>CC Chair Affiliated</i>	I	0.12	0.33	0	0	0
<i>% Busy Outsiders</i>	C	8.56	14.30	0	0	16.67
<i>% Busy Affiliated</i>	C	5.21	18.46	0	0	0
<i>% Busy Insiders</i>	C	26.66	39.86	0	0	50
<i>% Old Outsiders</i>	C	9.88	16.75	0	0	16.67
<i>% Old Affiliated</i>	C	6.97	21.27	0	0	0
<i>% Old Insiders</i>	C	1.72	8.85	0	0	0
<i>Lead Director</i>	I	0.08	0.27	0	0	0
<i>Insider Chairman</i>	I	0.77	0.42	1	1	1
<i>% Affiliated Appointed</i>	C	41.19	46.37	0	0	100
<i>% Outsiders Appointed</i>	C	68.20	34.81	40	80	100
<u>Stock Ownership Variables</u>						
<i>% Outsiders Own</i>	C	0.05	0.08	0.01	0.02	0.06
<i>% Executives Own (Excl. Top)</i>	C	0.56	1.39	0.03	0.10	0.37
<i>% Top Exec. Own</i>	C	3.30	7.38	0.11	0.47	2.34
<i>% Affiliated Own</i>	C	0.96	2.12	0	0.02	0.81
<u>Institutional Ownership Variables</u>						
<i>% Block Own</i>	C	15.85	13.30	5.59	13.60	24.55
<i># Block</i>	CNT	1.82	1.48	1	2	3
<i>% Largest</i>	C	9.14	5.05	5.53	8.32	11.67
<u>Activist Variables</u>						
<i># Activists</i>	CNT	6.61	4.12	3	6	10
<i>% Activists Own</i>	C	1.94	1.41	0.73	1.84	2.89

Variable	Var. Type	Mean	Std. Dev.	Q1	Median	Q3
<u>Debt Variables</u>						
<i>Debt to Market</i>	C	0.89	2.16	0.02	0.25	0.84
<i>Preferred to Market</i>	C	0.02	0.11	0	0	0
<u>Compensation Mix Variables</u>						
<i>% Long Term Mix</i>	C	52.91	29.34	33.14	58.59	76.93
<i>% Accounting Mix</i>	C	15.81	16.80	1.85	11.34	23.90
<u>Anti-Takeover Variables</u>						
<i>Staggered Board</i>	I	0.63	0.48	0	1	1
<i>Supermajority</i>	I	0.24	0.43	0	0	0
<i>State Incorporated</i>	I	0.08	0.27	0	0	0
<i>Unequal Voting</i>	I	0.09	0.29	0	0	0
<i>Poison Pill</i>	I	0.51	0.50	0	1	1

Variable Type refers to the nature of the variable: I (indicator variable), C (continuous variable), and CNT (count variable).

Board Variables

AC Meetings is the number of audit committee meetings (Equilar data).

CC Meetings is the number of compensation committee meetings (Equilar data).

Board Meetings is the number of board meetings (Equilar data).

CC Size is the number of directors serving on the compensation committee (Equilar data).

AC Size is the number of directors serving on the audit committee (Equilar data).

Board size is the number of directors serving on the board (Equilar data).

% Board Inside is the fraction of board comprised of insider (executive) directors (Equilar data).

% AC Affiliated is the fraction of the audit committee that is comprised of affiliated (grey) directors. Any outside director who is a former executive or who is mentioned in the “certain transactions” section of the proxy statement is classified as affiliated (Equilar data).

% CC Affiliated is the fraction of the compensation committee that is comprised of affiliated (grey) directors (Equilar data).

AC Chair Affiliated is an indicator variable equal to one if the chairperson of the audit committee is affiliated and zero otherwise.

CC Chair Affiliated is an indicator variable equal to one if the chairperson of the compensation committee is affiliated and zero otherwise.

% Busy Outsiders is the fraction of outside directors who serve on 4 or more other boards (Equilar data).

% Busy Affiliated is the fraction of affiliated directors who serve on 4 or more other boards (Equilar data).

% Busy Insiders is the fraction of insider directors who serve on 2 or more other boards (Equilar data).

% Old Outsiders is the fraction of outside directors that are older than 70 (Equilar data).

% Old Affiliated is the fraction of affiliated directors that are older than 70 (Equilar data).

% Old Insiders is the fraction of inside directors that are older than 70 (Equilar data).

Lead Director is an indicator variable equal to one if there is a lead director on the board and zero otherwise (Equilar data).

Insider Chairman is an indicator variable equal to one if an executive holds the position of chairperson of the board and zero otherwise (Equilar data).

% Affiliated Appointed is the fraction of affiliated directors that were appointed by existing insiders. This variable is set to zero if there are no affiliated directors (Equilar data).

% Outsiders Appointed is the fraction of outside directors that were appointed by existing insiders. This variable is set to zero if there are no outside directors (Equilar data).

Stock Ownership Variables

% Outsiders Own is the fraction of outstanding shares held by the average outside director (Equilar data).

% Executives Own (Excl. Top) is the fraction of outstanding shares held by the average executive director but excludes the holdings of the top executive. (Equilar data).

% Top Exec. Own is the fraction of outstanding shares held by the top executive (Equilar data).

% Affiliated Own is the fraction of outstanding shares held by the average affiliated director (Equilar data).

All stock ownership variables include only shares of common stock held and exclude options.

Institutional Ownership Variables

% Block Own is the fraction of outstanding shares owned by block-holders (Spectrum data). A blockholder is defined as a shareholder who holds more than 5% of outstanding shares.

Block is the number of block-holders (Spectrum data).

% Largest is the shareholding of the largest institution (Spectrum data).

Activist Variables

Activists is the number of activist institutions holding shares. An activist is defined as per Cremers and Nair (2003). Specifically, the following public pension funds are classified as activists: institutions with the following manager numbers on Spectrum are coded as activists: California Public Employees Retirement System (12000), California State Teachers Retirement (12100 and 12120), Colorado Public Employees Retirement Association (18740), Florida State Board of Administration (38330), Illinois State Universities Retirement System (81590), Kentucky Teachers Retirement System (49050), Maryland State Retirement and Pension System (54360), Michigan State Treasury (57500), Montana Board of Investment (58650), Education Retirement Board New Mexico (63600), New York State Common Retirement Fund (63850), New York State Teachers Retirement System (63895), Ohio School Employees Retirement System (66550), Ohio School Employees Retirement System (66610), Ohio State Teachers Retirement System (66635), Texas Teachers Retirement System (82895 and 83360), Virginia Retirement System (90803), State of Wisconsin Investment Board (93405). Manager numbers are in parentheses (Spectrum data).

% Activists Own is the fraction of outstanding shares held by activist institutions (Spectrum data).

Debt Variables

Debt to Market is the ratio of book value of debt (Compustat data item 9 plus data item 34) to the market value of equity (Compustat data item 199 * data item 25).

Preferred to Market is the ratio of book value of preferred equity (Compustat data item 130) to the market value of equity (Compustat data item 199 * data item 25).

Compensation Mix Variables

% Long Term Mix is the fraction of total annual CEO compensation that is comprised of performance plans, stock options and restricted stock grants.

% Accounting Mix is the fraction of total annual CEO compensation that is comprised of performance plans and annual bonus.

Anti-Takeover Variables

Staggered Board is an indicator variable equal to one if the firm has a staggered board and zero otherwise (Shark Repellant data).

Supermajority is an indicator variable equal to one if the firm has a supermajority provision for takeovers and zero otherwise (Shark Repellant data).

State Incorporated is an indicator variable equal to one if the firm is incorporated in Pennsylvania, Ohio, Wisconsin or Massachusetts, and zero otherwise (Shark Repellant data).

Unequal Voting is an indicator variable equal to one if there are unequal voting rights across common shareholders and zero otherwise (Shark Repellant data).

Poison Pill is an indicator variable equal to one if the firm has adopted a poison pill and zero otherwise (Shark Repellant data).

Table 3

Exploratory principal component analysis (PCA)

Factors are computed using PCA where we retain all factors with an eigenvalue greater than one. This table reports the loadings on individual governance variables for each of the 14 factors (reported in order of total variance explained). We retain variables where the absolute value of the loading exceeds 0.4 and the loading is significant at conventional levels (using boot-strapped standard errors).

Factor	Component Loading	Standard Error	Factor	Component Loading	Standard Error
<u>Active</u>			<u>Anti-Takeover I</u>		
<i># Activists</i>	0.654	0.066	<i>Poison Pill</i>	0.665	0.139
<i>% Activists Own</i>	0.625	0.070	<i>% Affiliated Own</i>	-0.517	0.173
<i>% Outsiders Own</i>	-0.665	0.072	<i>Staggered Board</i>	0.476	0.225
<u>Block</u>			<u>Old Directors</u>		
<i>% Block Own</i>	0.985	0.003	<i>% Old Outsiders</i>	0.688	0.334
<i># Block</i>	0.877	0.008	<i>% Old Affiliated</i>	0.563	0.312
<i>% Largest</i>	0.848	0.008	<i>% Old Insiders</i>	0.605	0.332
<u>Affiliated</u>			<u>Debt</u>		
<i>% AC Affiliated</i>	0.822	0.183	<i>Debt to Market</i>	0.778	0.296
<i>% CC Affiliated</i>	0.627	0.072	<i>Preferred to Market</i>	0.804	0.306
<i>AC Chair Affiliated</i>	0.824	0.242	<u>Insider Power</u>		
<i>CC Chair Affiliated</i>	0.536	0.089	<i>% Executives Own (Excl. Top)</i>	0.737	0.193
<u>Insider Appointed</u>			<i>% Top Exec. Own</i>	0.720	0.181
<i>% Affiliated Appointed</i>	0.752	0.089	<i>% Board Inside</i>	0.467	0.105
<i>% Outsiders Appointed</i>	0.768	0.095	<i>Unequal Voting</i>	0.396	0.200
<u>Compensation Mix</u>			<u>Board Size</u>		
<i>% Long Term Mix</i>	-0.824	0.386	<i>CC Size</i>	0.884	0.017
<i>% Accounting Mix</i>	0.896	0.465	<i>AC Size</i>	0.872	0.019
<u>Meetings</u>			<i>Board Size</i>	0.693	0.032
<i># AC Meetings</i>	0.762	0.111	<u>Anti-Takeover II</u>		
<i># CC Meetings</i>	0.678	0.108	<i>Supermajority State</i>	0.625	0.294
<i># Board Meetings</i>	0.695	0.115	<i>Incorporated</i>	0.792	0.388
<u>Lead Director</u>			<u>Busy Directors</u>		
<i>Lead Director</i>	0.842	0.412	<i>% Busy Outsiders</i>	0.424	0.208
<i>Insider Chairman</i>	0.441	0.177	<i>% Busy Affiliated</i>	0.698	0.321
			<i>% Busy Insiders</i>	0.452	0.202

All variables are as defined in Table 2.

Table 4
Descriptive Statistics and Correlations for the Factor Scores

Panel A: Descriptive Statistics

Factor	Percent Explained	Mean	Std. Dev.	Q1	Median	Q3
Active	10.72	0	0.788	-0.559	0.002	0.729
Block	7.41	0	0.908	-0.677	-0.079	0.639
Affiliated	5.86	0	0.735	-0.467	-0.467	0.247
Insider Appointed	5.43	0	0.836	-0.706	0.013	0.856
Comp. Mix	4.85	0	0.872	-0.696	-0.162	0.481
Meetings	3.87	0	0.739	-0.547	-0.093	0.445
Lead Director	3.53	0	0.654	-0.419	-0.419	0.765
Anti-Takeover I	3.28	0	0.650	-0.625	0.041	0.714
Old Directors	3.03	0	0.814	-0.371	-0.371	0.127
Debt	2.94	0	0.658	-0.292	-0.235	-0.066
Insider Power	2.84	0	0.835	-0.425	-0.226	0.168
Board Size	2.73	0	0.667	-0.600	-0.216	0.391
Anti-Takeover II	2.61	0	0.767	-0.425	-0.425	0.749
Busy Directors	2.61	0	0.651	-0.516	-0.183	0.320

Factor scores are calculated as the average of the standardized components with the exception of Active, Anti-Takeover I, Compensation Mix and Lead Director. These factors have substitute components. These factor scores are calculated using the respective standardized components as follows to reflect the substitutability: Active is the sum of # Activists and % Activist Own minus % Outsider Own, divided by three. Anti-Takeover I is the sum of Staggered Board and Poison Pill minus % Affiliated Own, divided by three. Compensation Mix is % Accounting Mix minus % Long Term Mix, divided by two. Lead Director is Lead Director minus Insider Chairman, divided by two.

Panel B: Correlations – Pearson (Spearman) correlations are presented in the upper (lower) diagonal.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Active (1)	--	.088 (.000)	-.197 (.000)	-.067 (.002)	-.159 (.000)	.209 (.000)	.213 (.000)	-.036 (.099)	-.082 (.000)	-.183 (.000)	.301 (.000)	-.075 (.001)	.063 (.004)	.325 (.000)
Block (2)	.097 (.000)	--	-.059 (.007)	-.041 (.060)	-.037 (.088)	-.050 (.022)	.029 (.187)	-.027 (.215)	-.021 (.328)	.024 (.269)	-.155 (.000)	.047 (.030)	-.049 (.023)	.003 (.906)
Affiliated (3)	-.217 (.000)	-.076 (.000)	--	.167 (.000)	.043 (.051)	-.056 (.010)	-.245 (.000)	.093 (.000)	.141 (.000)	.088 (.000)	-.069 (.002)	.008 (.730)	-.050 (.021)	-.017 (.427)
Insider Appointed (4)	-.093 (.000)	-.039 (.074)	.248 (.000)	--	.022 (.322)	-.124 (.000)	-.086 (.000)	.119 (.000)	-.013 (.548)	.270 (.000)	-.082 (.000)	-.214 (.000)	-.033 (.129)	-.044 (.042)
Compensation Mix (5)	-.150 (.000)	-.058 (.008)	.037 (.088)	.005 (.812)	--	-.147 (.000)	-.039 (.074)	.096 (.000)	.056 (.010)	.131 (.000)	.087 (.000)	-.042 (.057)	.110 (.000)	-.098 (.000)
Meetings (6)	.241 (.000)	-.041 (.057)	-.066 (.002)	-.141 (.000)	-.138 (.000)	--	.117 (.000)	-.068 (.002)	.092 (.000)	-.198 (.000)	.222 (.000)	.086 (.000)	.027 (.222)	.071 (.001)
Anti-Takeover I (7)	.236 (.000)	.036 (.099)	-.317 (.000)	-.139 (.000)	-.016 (.453)	.126 (.000)	--	-.042 (.052)	-.097 (.000)	-.170 (.000)	.169 (.000)	-.027 (.207)	.139 (.000)	.036 (.097)
Old Directors (8)	-.016 (.457)	-.042 (.053)	.061 (.005)	.077 (.000)	.104 (.000)	-.048 (.026)	-.081 (.000)	--	.012 (.568)	.127 (.000)	.027 (.208)	-.026 (.233)	.036 (.097)	-.024 (.280)
Debt (9)	.070 (.001)	-.052 (.017)	.008 (.699)	-.022 (.309)	.219 (.000)	.165 (.000)	.047 (.030)	.077 (.000)	--	.035 (.112)	.028 (.198)	-.009 (.673)	.003 (.904)	-.007 (.761)
Insider Power (10)	-.251 (.000)	.031 (.154)	.079 (.000)	.346 (.000)	.029 (.183)	-.224 (.000)	-.158 (.000)	.094 (.000)	-.112 (.000)	--	-.256 (.000)	-.197 (.000)	-.033 (.128)	-.169 (.000)
Board Size (11)	.356 (.000)	-.129 (.000)	-.059 (.007)	-.104 (.000)	.143 (.000)	.247 (.000)	.181 (.000)	.091 (.000)	.319 (.000)	-.361 (.000)	--	.024 (.262)	.190 (.000)	.198 (.000)
Lead Director (12)	-.096 (.000)	.037 (.092)	.019 (.384)	-.223 (.000)	-.028 (.206)	.063 (.004)	-.043 (.047)	-.001 (.977)	-.023 (.293)	-.210 (.000)	.018 (.414)	--	.002 (.933)	-.012 (.580)
Anti-Takeover II (13)	.071 (.001)	-.060 (.006)	-.061 (.005)	-.030 (.174)	.156 (.000)	.024 (.277)	.132 (.000)	.036 (.094)	.138 (.000)	-.054 (.014)	.215 (.000)	-.006 (.800)	--	-.009 (.678)
Busy (14)	.372 (.000)	.039 (.076)	-.036 (.095)	-.075 (.001)	-.114 (.000)	.077 (.000)	.059 (.006)	-.021 (.339)	.081 (.000)	-.236 (.000)	.214 (.000)	-.022 (.305)	-.005 (.820)	--

Table 5
Relation Between Abnormal Accruals and Governance Factors

$$\text{Abnormal Accruals}_t = \alpha + \Sigma\beta\text{Governance Factors}_t + \varepsilon_t$$

Panel A: Signed abnormal accruals

Variable	Pred. Sign	Ordinary Least Squares		Recursive Partitioning
		Governance Only Specification		Governance Only Specification
Governance				
Intercept		0.008	***	
Active	-	0.008	***	Linear (+)
Block	-	0.005	*	
Affiliated	+	-0.005		
Insider Appointed	+	0.007	**	Non-Linear
Compensation Mix	+/?	0.006	**	
Meetings	-	-0.001		
Lead Director	-	0.004		
Anti-Takeover I	+	-0.001		
Old Directors	+	-0.001		Non-Linear
Debt	-	-0.005		
Insider Power	+	0.008	**	
Board Size	+	0.001		Non-Linear
Anti-Takeover II	+	0.005		Linear (+)
Busy Directors	+	0.004		
Controls				
N/A				
Sample Size		1,471		1,471
R ² (Adj. R ²)		2.8%		
Governance Factors Only		(1.90%)		4.51%

Panel B: Positive abnormal accruals sub-sample

Variable	Pred. Sign	Ordinary Least Squares		Recursive Partitioning
		Governance Only Specification		Governance Only Specification
Governance				
Intercept		0.051	***	
Active	-	-0.007	***	
Block	-	-0.001		
Affiliated	+	0.001		
Insider Appointed	+	0.002		
Compensation Mix	+/?	0.002		
Meetings	-	0.003		
Lead Director	-	0.003		
Anti-Takeover I	+	0.003		
Old Directors	+	-0.002		
Debt	-	-0.005		Linear (-)
Insider Power	+	0.003		
Board Size	+	-0.006	***	Non-Linear
Anti-Takeover II	+	-0.001		
Busy Directors	+	0.002		
Controls				
N/A				
Sample Size		909		909
R ² (Adj. R ²)		4.80%		
Governance Factors Only		(3.30%)		4.77%

Panel C: Negative abnormal accruals sub-sample

Variable	Pred. Sign	Ordinary Least Squares		Recursive Partitioning
		Governance Only Specification		Governance Only Specification
Governance				
Intercept		-0.060	***	
Active	+	0.013	***	
Block	+	0.003		
Affiliated	-	-0.007	*	
Insider Appointed	-	0.005		
Compensation Mix	-/?	0.006		
Meetings	+	-0.006		
Lead Director	+	0.003		
Anti-Takeover I	-	-0.003		
Old Directors	-	0.006		
Debt	+	0.004		
Insider Power	-	0.006		
Board Size	-	0.019	***	Linear (+)
Anti-Takeover II	-	0.011	**	Linear (+)
Busy Directors	-	0.006		
Controls				
N/A				
Sample Size		562		562
R ² (Adj. R ²)		13.50%		10.47%
Governance Factors Only		(11.30%)		

* ** *** Indicates significance at the 10, 5 and 1 percent level respectively (two-tailed tests) for the regression specification. For the recursive partitioning analysis we report only those governance factors that were significant and note whether the relation was linear or non-linear. If linear, we also note the sign of the relation.

The accrual model is estimated using the Jones (1991) technique of decomposing total accruals into a normal (expected) and abnormal (unexpected) component. The method of decomposition is as follows:
 $TA = \alpha + \beta_1(\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 BM + \beta_4 CFO + \varepsilon$
TA is the difference between operating cash flows (item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. $\Delta Sales$ is the change in sales (item 12) for the year. ΔREC is the change in receivables reported on the statement of cash flows (item 302) for the year. *PPE* is the gross amount of property, plant and equipment (item 7). *CFO* is the operating cash flows (item 308). All variables used in the abnormal accrual model (except *BM*) are scaled by average total assets using assets from the start and end of the fiscal year. The regression is run for every 2 digit SIC group in the sample with a requirement of at least 10 observations in each group. Independent variables in the accrual model are all winsorized to be no greater than one in absolute value, with the exception of *BM* that is winsorized at the extreme two percentiles (i.e., values less (greater) than the 2nd (98th) percentile are set equal to the value of the 2nd (98th) percentile). *Abnormal Accruals* is the residual from the above equation.

Table 6
Relation Between Earnings Restatements and Governance Factors

$$\text{Restatement}_t = \alpha + \sum \phi \text{Controls}_t + \sum \beta \text{Governance Factors}_t + \varepsilon_t$$

Variable	Pred. Sign	Logistic Regression		Recursive Partitioning	
		Governance Only Specification	Governance and Controls Specification	Governance Only Specification	Governance and Controls Specification
Governance					
Intercept		-2.867 ***	-3.411 ***		
Active	-	-0.145	-0.238		
Block	-	0.040	0.089		
Affiliated	+	-0.135	-0.154		
Insider Appointed	+	-0.136	-0.128		Linear (-)
Compensation Mix	+/?	-0.020	0.059		
Meetings	n/a	n/a	n/a	n/a	n/a
Lead Director	-	0.080	0.087		
Anti-Takeover I	+	0.117	0.109		
Old Directors	+	-0.194	-0.191		
Debt	-	0.185 **	0.171 **	Linear (+)	Linear (+)
Insider Power	+	0.290 **	0.277 *		Non-linear
Board Size	+	0.079	0.020	Linear (-)	
Anti-Takeover II	+	-0.072	-0.059		
Busy Directors	+	0.147	0.101		
Controls					
BM	-		-0.317		Non-linear
Log (Market Cap.)	+		0.102		
External Financing	+		0.188		
Acquisitions	+		0.757		
Free Cash Flow	+		-0.584		
Sample Size		2,094	2,094	2,094	2,094
R ² Governance Factors Only		1.8%		n/a	
Incremental R ² from Controls			1.1%		n/a
Incremental R ² from Governance Factors			2.0%		n/a

Hit rates for correctly classifying the occurrence of Restatements					
Cut-off value	0.10	0.20	0.30	0.40	0.50
ECONOMIC DETERMINANTS	0.8%	0%	0%	0%	0%
GOVERNANCE ONLY	6.8%	0.8%	0%	0%	0%
FULL	10.2%	1.7%	0%	0%	0%

Hit rates for correctly classifying the absence of Restatements					
Cut-off value	0.10	0.20	0.30	0.40	0.50
ECONOMIC DETERMINANTS	100%	100%	100%	100%	100%
GOVERNANCE ONLY	98.1%	99.7%	100%	100%	100%
FULL	96.5%	99.6%	100%	100%	100%

*, **, *** Indicates significance at the 10, 5 and 1 percent level respectively (two-tailed tests) for the logistic regression specifications. For the recursive partitioning analysis we report only those governance factors that were significant and note whether the relation was linear or non-linear. If linear, we also note the sign of the relation.

Restatement is an indicator variable equal to one if the firm reports an earnings restatement related to the fiscal year (or a subsequent fiscal period) for which we have governance data, and zero otherwise. For example, firm XYZ has a December 31, 2002 fiscal year end. If XYZ restates its earnings for any of the fiscal periods from January 1, 2002 onwards Earnings Restatement=1. Firms that restate earnings in an earlier fiscal period are dropped from the analysis. For example, if firm XYZ had a restatement prior to January 1, 2002 we exclude that observation from our analysis. This leaves us with a sample of 2,095 firms of which 118 restate earnings. We exclude earlier restatements because we cannot be sure that the governance structures we measure have changed in response to the restatement.

Control variables include BM (book-to-market) calculated as the book value of common equity (Compustat data item 60) divided by the market value of common equity (item 25 * item 199), External Financing, calculated as the total net external financing from debt-holders and shareholders during the fiscal period that was restated (calculated as net equity financing, item 108 – item 115 – item 127, plus net debt financing, item 111 – item 114 + item 301, all deflated by beginning market value of equity), Log (Market Cap.), measured as the natural logarithm of market value of common equity, Free Cash Flow (measured as the difference between operating cash flows, item 308, and average capital expenditures over the 3 prior years, item 128) and Acquisitions (calculated as total cash spent on acquisitions during the fiscal period restated, item 129, deflated by beginning market value of equity). BM and Log (Market Cap.) are measured prior to the fiscal period which is restated. All control variables are winsorized at the extreme two percentiles (i.e., values less (greater) than the 2nd (98th) percentile are set equal to the value of the 2nd (98th) percentile). Note that Meetings is excluded from the set of governance factors in these regression analyses because the number of meetings is influenced by the restatement in the period it is discovered/announced.

Table 7
Relation Between Future Operating Performance and Governance Factors

$$ROA_{t+1} = \alpha + \Sigma\phi\text{Controls}_t + \Sigma\beta\text{Governance Factors}_t + \varepsilon_t$$

Variable	Pred. Sign	Ordinary Least Squares		Recursive Partitioning	
		ROA _{t+1}	Industry Adjusted ROA _{t+1}	ROA _{t+1}	Industry Adjusted ROA _{t+1}
		Governance Only Specification	Governance and Controls Specification	Governance and Controls Specification	Governance and Controls Specification
Governance					
Intercept		0.037 ***	-0.271 ***		
Active	+	0.062 ***	0.004	Linear (+)	Linear (+)
Block	+	0.002	0.010 ***		
Affiliated	-	-0.004	-0.004		
Insider Appointed	-	-0.003	-0.003		
Compensation Mix	+/?	0.032 ***	0.025 ***	Linear (+)	Linear (+)
Meetings	+	-0.005	-0.003		
Lead Director	+	0.000	0.003 *		
Anti-Takeover I	-	-0.019 ***	-0.007		
Old Directors	-	0.005	0.004		
Debt	+	-0.012 ***	-0.001	Linear (-)	Linear (-)
Insider Power	-	0.012 **	0.006		
Board Size	-	0.012 ***	-0.008 *		
Anti-Takeover II	-	0.007 *	0.007 *		
Busy Directors	-	-0.005	-0.023 ***		
Controls					
Log (Market Cap.)			0.400 ***		
Sample Size		2,060	2,007	2,060	2,007
R ² (Adj. R ²)		14.8%		16.18%	
Governance Factors Only		(14.2%)			
Incremental R ² from Controls			5.9%		12.27%
Incremental R ² from Governance Factors			4.7%		6.63%

*, **, *** Indicates significance at the 10, 5 and 1 percent level respectively (two-tailed tests) for the regression specifications. For the recursive partitioning analysis we report only those governance factors that were significant and note whether the relation was linear or non-linear. If linear, we also note the sign of the relation.

ROA (return on assets) is calculated as income before extraordinary items (Compustat data item 178) scaled by average total assets.

Control variables for the operating performance regressions include Log (Market Cap.), measured as the natural logarithm of market value of common equity at the start of the fiscal period, and industry adjusted ROA (using the median ROA for each 2 digit SIC code with at least 5 firms).

Table 8
Relation Between Future Stock Returns and Governance Factors

$$\text{Alpha}_t = \alpha + \Sigma\beta\text{Governance Factors}_t + \varepsilon_t$$

Variable	Pred. Sign	Ordinary Least Squares		Recursive Partitioning
		Governance Only Specification		Governance Only Specification
Governance				
Intercept		-0.002		
Active	+	0.001		
Block	+	0.000		Non-Linear
Affiliated	-	0.000		
Insider Appointed	-	0.002	*	Linear (+)
Compensation Mix	-/?	0.004	***	Linear (+)
Meetings	+	0.001		
Lead Director	+	0.004	***	Linear (+)
Anti-Takeover I	-	-0.002		
Old Directors	-	0.001		
Debt	+	-0.003	***	
Insider Power	-	-0.004	***	
Board Size	-	0.002		
Anti-Takeover II	-	0.000		
Busy Directors	-	0.001		
Controls				
N/A				
Sample Size			2,066	2,066
R ² Governance Factors Only			2.0%	2.72%

*, **, *** Indicates significance at the 10, 5 and 1 percent level respectively (two-tailed tests) for the regression specifications. For the recursive partitioning analysis we report only those governance factors that were significant and note whether the relation was linear or non-linear. If linear, we also note the sign of the relation.

Alpha is the intercept from a regression of monthly firm excess returns (excess over the risk free rate) on the monthly factor returns (MKT, SMB, HML and UMD). The factor returns are obtained from Ken French's website. For each firm we use up to 30 months of return data to generate alpha.