

The Promise and Peril of Corporate Governance Indices*

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Abstract

Financial economists and commercial providers of governance services have in recent years created measures of the quality of firms' corporate governance which collapse into a single number (a governance rating or index) the multiple dimensions of a company's governance. The aim of this paper is twofold, to analyze the performance of corporate governance indices in predicting corporate performance, and to consider the implications for public policy that follow from that assessment. We highlight methodological shortcomings of the extant research that claims to have identified a relation between particular governance measures and corporate performance. Our core conclusion is that there is no consistent relation between governance indices and measures of corporate performance. Namely, there is no one "best" measure of corporate governance: the most effective governance institution appears to depend on context, and on firms' specific circumstances. It would therefore be difficult for an index, or any one variable, to capture critical nuances for making informed decisions. As a consequence, we conclude that governance indices are highly imperfect instruments for determining how to vote corporate proxies, let alone for portfolio investment decisions, and that investors and policymakers should exercise caution in attempting to draw inferences regarding a firm's quality or future stock market performance from its ranking on any particular corporate governance measure. Most important, the implication of our analysis is that corporate governance is an area where a regulatory regime of ample flexible variation across firms that eschews governance mandates is particularly desirable, because there is considerable variation in the relation between the indices and measures of corporate performance.

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Introduction

Following the collapse of Enron and a succession of accounting scandals, corporate governance took on a new urgency, becoming a topic of intense media, regulatory, and activist institutional investor interest.¹ The hope was that closer scrutiny of firms' governance could prevent future Enrons. Accordingly, federal legislation and stock exchange listing requirements enacted in reaction to the scandals emphasized corporate governance solutions.² Mutual funds were forced to become more involved in governance under regulation adopted by the U.S. Securities and Exchange Commission (SEC) in 2003 requiring funds to adopt written policies on proxy voting and to disclose their specific votes.³ And the heightened attention accorded corporate governance increased the demand for third-party corporate governance-related services, demand both by institutional investors for research and advice on proxy voting and by corporations for advice on how to improve their governance ratings.

¹ For example, there were 426 news stories containing the term "corporate governance" in the *New York Times* in 2002, compared to only 69 in 2000, as found in a Lexis search in the New York Times file in the News library conducted on May 24, 2006. A search of the entire News library in Lexis found similar results, although the order of magnitude differs: there were 38,477 articles referring to corporate governance in 2002, compared to 18,205 articles in 2000. Activist institutions, such as union and public pension funds directed their engagement in the proxy process post-Enron toward advancing their views of good corporate governance. Corporate governance proposals, as identified by the Investor Responsibility Research Center (IRRC), which tracks shareholder proposals submitted at over 1900 firms, including the Fortune 500 and S&P 500, increased by almost 40% after 2001, averaging 275 over the four years before 2001 and 380 the four years after. [Citation needed] The topicality of corporate governance in the media has not abated: in five years since Enron's collapse, there have been 1,342 *New York Times* news stories containing the phrase "corporate governance," whereas to reach a comparable count prior to that date, one has to cumulate news stories over ten years back to 1986 (totaling 1,388), as searched in Lexis in September 2006.

² Sarbanes-Oxley Act of 2002 § 301, Pub. L. No. 107-204, 116 Stat. 745 (2002) (all audit committee members must be independent); Self-Regulatory Organizations, Order Approving Proposed Rules Changes, Release No. 34-48745, 68 Fed. Reg. 64,154 (Nov. 4, 2003) (approving NYSE Final Rule, Final Corporate Governance Listing Standards, to be codified at NYSE Listing Manual 303A; and NASD Amendments to Rules 4200 and 4350(c) (majority of board and all compensation and nomination committee members must be independent).

³ U.S. Securities and Exchange Commission, Disclosure of Proxy Voting Policies and Proxy Voting Records by Registered Management Investment Companies, Release Nos. 33-8188, 34-47304, IC-25922, 68 Fed. Reg. 6,564 (Feb. 7, 2003).

Shortly before the surge in media attention on corporate governance surrounding the collapse of Enron and other accounting scandals, a team of financial economists, Paul Gompers, Joy Ishii, and Andrew Metrick (GIM), wrote a seminal paper in which they constructed an index of the quality of corporate governance for a large number of publicly traded U.S. firms. They found that higher quality as defined by their index was associated with improved future stock performance,⁴ and the focus on corporate governance following Enron's collapse made GIM's work of great interest to a far wider audience than academics working on corporate governance. For example, the relation between governance and performance identified in their paper offered intellectual support for commercial governance ranking services, a connection not lost on those organizations. Although GIM were assiduously careful in interpreting their data and did not draw causal conclusions about the relation between good governance and superior performance, commercial providers of governance services and some institutional investor activists exercised no such caution.⁵ This incaution fed into the demand for governance services, which accelerated post-Enron. A market for corporate governance ratings now exists, with those ratings being used in the formulation of voting recommendations by proxy advising firms, such as the dominant market leader, Institutional Shareholder Services, Inc. (ISS), and for use in institutions'

⁴ Paul Gompers, Joy Ishii & Andrew Metrick, Corporate Governance and Equity Prices, NBER W.P. W8449 (August 2001). The paper was presented at the NBER's 2001 summer conference; it was not published until two years later. GIM's research was a response to, and outgrowth of, an important move in the finance literature that had become one of the more active areas of research, in which countries were classified by the quality of their corporate laws' protection of shareholders, and correlations identified between the quality of the regime and favorable economic features, such as growth and market capitalization. See, e.g., Rafael LaPorta et al., Law and Finance, 106 J. Pol. Econ. 1113 (1998). Because that comparative literature did not operate at the firm level in analyzing corporate governance but used laws "on the books", GIM's paper was both a natural, and influential, extension of that literature's finding that "law mattered."

⁵ See notes 47 & 59 *infra*, noting Glass Lewis & Co.'s use of academic research in the construction and marketing of its governance ranking system, and Institutional Shareholder Services, Inc.'s marketing claims regarding the relation between its governance ranking and performance.

investment decisions.⁶ The idea underlying ratings construction is to benchmark a firm's governance features against what the index constructor considers to be the best practice, and a firm's score on the index or rating is intended to provide a readily comparable, summary measure of governance quality.

The aim of this Article is twofold: first, to analyze the performance of corporate governance indices as predictors of corporate performance, and, second, to consider the public policy implications that follow from that assessment. Establishing a relation between governance and performance is technically difficult because the two variables are plausibly endogenous, and use of the existing indices can magnify that problem because construction of those indices is based on two factually incorrect assumptions: one, that good governance components do not vary across firms and, two, that such components are always complements and never substitutes. The Article examines methodological issues in the construction and interpretation of governance indices and their relation to performance not so much to critique the foundational work of GIM, although we do that, but rather to criticize the use to which corporate governance indices such as GIM's have been put.⁷ Because the precise construction of

⁶ See Paul Rose, *The Corporate Governance Industry*, 32 *J. Corp. L.* 887 (2007); commercial index providers often emphasize, in marketing their products and services, their usefulness in portfolio decisions, with voting decisions listed as an additional use or service, e.g., GovernanceMetrics International, "Who uses GMI Ratings", [http://www.gmiratings.com/\(rvmrks5545fmmd25cuzkhjrl\)/RatingProcess.aspx](http://www.gmiratings.com/(rvmrks5545fmmd25cuzkhjrl)/RatingProcess.aspx); Glass Lewis & Co., "What We Do", <http://www.glasslewis.com/solutions/index.php>. Because ISS also provides governance consulting services to firms, some commentators have criticized the use of its governance index in its proxy voting advice as creating an inherent conflict of interest. E.g., id.; Jeffrey Sonnenfeld, *Good Governance and the Misleading Myths of Bad Metrics*, 18 *Acad. Mgmt. Exec.* 108, 111 (2004). ISS's position is that there is no conflict because it has established "firewalls" between the divisions, as is the practice in investment banks for mitigating conflicts across the various services they offer firms and investors. Of course, not all providers of governance rankings are in a conflicted position, since many do not engage in issuer consulting services or provision of proxy voting advice. In our view, reliance on governance indices in proxy voting is problematic quite apart from whether there is a conflict of interest, and we therefore do not address this issue.

⁷ For other commentators raising concern about the leading governance indices see Rose, *supra* note 4 and

commercial indices is viewed as proprietary information by their owners and is thus not publicly disclosed, our analysis focuses on the relation between corporate performance and the academic indices, some of which are, fortunately for our purposes, closely linked to commercial ones. We believe that conclusions from this analysis are equally applicable to the use of commercial indices. This judgment is bolstered by a recent study finding no systematic relation between commercial governance ratings and firms' future performance.⁸

Our core conclusion is that there is no consistent relation between the academic and related commercial governance indices and measures of corporate performance. In short, there is no one "best" measure of corporate governance: The most effective governance institution appears to depend on context, and on firms' specific circumstances. It would therefore be difficult for an index, or any one variable, to capture critical nuances necessary for making informed regulatory, investing, or proxy voting decisions. As a consequence, we also conclude that governance indices are highly imperfect and that investors and policymakers should exercise utmost caution in attempting to draw inferences regarding a firm's quality or future stock market performance from its ranking on any particular corporate governance measure. In fact, a single governance variable, the median independent-director's stockholdings, outperforms all existing governance indices in predicting corporate performance. Most importantly, our analysis implies that corporate governance is an area where a flexible regulatory regime allowing ample variation across firms is particularly desirable because there is considerable variation in the relation between different governance indices and different measures of performance. In short, mandatory governance terms are the functional equivalent of a governance index that has the

Sonnenfeld, *supra* note 4.

⁸ As discussed in footnote 121, *infra*, important recent empirical work finding no consistent positive relation between commercial governance ratings and firms' performance, lends support to our conclusions that are informed by our analysis of academic indices.

force of law, as they impose on all firms, without allowance for customization to a firm's specific circumstances, governance characteristics that a legislature or regulator considers to be best practices, just as is done by an index-creator in selecting the components of the index.

The first part of the paper briefly summarizes the principal mechanisms of corporate governance and research on their relation to corporate performance, and then turns to the indices that have been advanced to measure the quality of firms' corporate governance. The next part introduces our methodological concerns regarding the indices' construction and discusses recent work by two of us on the relation between governance mechanisms and performance that calls into question findings in the academic literature concerning that relation. In the final section, we draw upon the earlier analysis to suggest when, if ever, specific governance indices might prove to be useful for investors, and, more importantly, we outline what our analysis implies concerning the direction corporate governance regulation ought to take.

I. Measuring Corporate Governance

Following GIM's contribution, there are now a number of academic and commercial indices created to measure the quality of a firm's governance. This Part outlines the principles and findings underlying and motivating the governance index project generally. After identifying the principal institutions of corporate governance comprising existing indices, we review the research investigating the relation between those governance mechanisms and performance, the identification of which has been elusive. We then discuss the leading governance indices and the initial findings regarding their relation to performance. By reducing multiple dimensions of governance to one number, indices could illuminate a relation between governance and performance that could not be identified in analyses based on individual governance components.

A. Institutions of Corporate Governance

The key focus of U.S. corporate law and corporate governance systems is the agency problem, an organizational concern that arises because corporate ownership and corporate control are separated. An agency problem arises when managers (controllers) and shareholders (owners) are not identical because managers may take actions that benefit themselves at shareholders' expense. Managers may, for example, not work as diligently as they could because the increase in firm value that hard work produces (the marginal benefit) is shared with stockholders (in proportion to stockholders' equity investments) while managers bear the full marginal cost of their greater exertion. The panoply of mechanisms by which managers are incentivized and/or constrained to act in the shareholders' interest constitutes a firm's corporate governance, which corporate law seeks to facilitate and support by providing an organizing framework. The most elemental components of a corporate governance system are the board of directors, shareholder meetings and shareholder voting, and executive compensation.⁹

1. Board of Directors

Directors who are not employees of the corporation (independent or outside directors) are considered by some commentators and many institutional investors to be the crucial corporate governance mechanism for monitoring managers.¹⁰ Congress and the stock exchanges under the

⁹ See, e.g., Council of Institutional Investors, *Corporate Governance Policies* (April 11, 2008), available at <http://www.cii.org/UserFiles/file/council%20policies/CII%20Corp%20Gov%20Policies%204-11-08%20Final.pdf> [hereinafter CII Policies] (outlining Council of Institutional Investors' corporate governance policies). The first three components—boards, shareholder meetings and voting—are codified in state corporation laws. The New York Stock Exchange's corporate governance listing requirements focus on boards of directors and shareholder voting on compensation plans. See NYSE Corporate Governance Listing Standards, section 303-A, available at <http://www.nyse.com/about/listed/1101074746736.html> (hereafter NYSE standard).

¹⁰ CII Policies, *supra* note 6; CalPERS, *Global Principles of Accountable Corporate Governance* 10 (2008) (item III.B.1, Board Independence & Leadership), available at <http://www.calpers-governance.org/principles/docs/pub-20-2008-5-1.pdf>. The classic academic work advocating independent

shadow of the SEC have codified this notion of the directors' role, by mandating, respectively, appointment of independent directors to all of the audit committee positions, and to all of the compensation and nominating committee positions as well as to a majority of the board.¹¹ In addition, investor organizations identified most closely with public pension and union funds have outlined what they consider best practices, of which the keystone is for the board to consist of independent directors, including the board chairman.¹²

2. The Shareholder Franchise and Block Ownership

Shareholder meetings and voting rights provide owners with an opportunity to select and replace directors, to approve or reject management initiatives offered for shareholder consideration, and to present proposals for management's consideration and otherwise interact directly with management. Institutional investor activism in recent years has focused on this governance mechanism, through sponsorship of proposals and negotiation with management over the proposals' substance, on a variety of governance issues, such as takeover defenses and executive compensation.¹³ Such activism is also connected to the governance mechanism of the board of directors, in that shareholder proposals often seek to increase the representation of independent directors on the board, although the current emphasis has been directed at the number of votes required to elect directors. However, shareholder collective action problems make voting rights alone an imperfect governance mechanism.

Shareholders who own a significant block of stock (blockholders) are better able to make

directors is Melvin A. Eisenberg, *The Structure of the Corporation: A Legal Analysis* (1976).

¹¹ Sarbanes-Oxley Act section 301, 2002 U.S.C.C.A.N. (116 Stat.) at 775-77 (codified at 15 U.S.C. §78j-l(m); NYSE standard, *supra* note 6. All exchange rules, which include these listing requirements, must be approved by the SEC. [This is no doubt a commonly known legal requirement, but is there a statutory cite we could include here?]

¹² E.g., CII Policies, *supra* note 8, at 3 (minimum of 2/3 of board should be independent).

¹³ Romano, *Less is More: Making Institutional Investor Activism A Valuable Mechanism of Corporate Governance*, 18 *Yale J. on Reg* 174 (2001); CII website, *supra* note 8.

use of their ownership to monitor managers than are small shareholders, because the cost of a blockholder's activism is more likely to be recouped by the pro rata benefits obtained, as it is spread over more shares. Therefore, blockholders are often separately characterized in the academic literature as a mechanism of corporate governance.¹⁴ The most acute example of this governance mechanism is the hostile takeover, as a takeover typically results in the concentration of ownership that fully internalizes the costs and benefits of the agency problem. Moreover, even the threat of a takeover can function as a manager-disciplining mechanism. Accordingly, institutions that not only create blocks but also facilitate control changes are often characterized as critical backstop components of corporate governance. If agency costs become too high, it will be profitable to take over the firm and concentrate control, reducing those costs.

Accordingly, firms that adopt defenses to takeover devices to impede control changes are conventionally characterized as firms with poor corporate governance, and the absence of such defenses is correlatively identified as a feature of good corporate governance.¹⁵ The market for control is referred to in the literature as an "external" governance mechanism—it is an institution that disciplines managers but it is external to the firm—in contrast to firms' "internal" governance mechanisms, such as the board of directors, which are institutions constraining the agency problem that exist within the boundaries of the firm, thereby being institutions over which firms exert greater control.

3. Executive Compensation

¹⁴ E.g., Andrei Shleifer & Robert W. Vishny, Large Shareholders and Corporate Control, 94 J. Pol. Econ. 461 (1986); Andrei Shleifer & Robert W. Vishny, A Survey of Corporate Governance, 52 J. Fin. 737 (1997).

¹⁵ Shareholder activism – the creation of the Council of Institutional Investors and the sponsorship of shareholder proposals by public pension funds and other institutional investors – was initiated in the 1980s in response to management efforts to thwart hostile takeovers. The bulk of investor activism has historically been directed at repealing firm-level defenses. See, e.g., Romano, *supra* note 10.

A final important component of firms' internal governance is executive compensation. There is a well-developed literature on the fashioning of incentives to achieve consonance between manager's actions and shareholders' interest through the use of stock and stock option compensation.¹⁶ Until the recent spate of corporate scandals that began with Enron, compensation in the form of stock and stock options was often emphasized as a key to improved corporate performance, and such compensation has been the most substantial component of executive pay for well over a decade. Even Congress implicitly accepted the governance function of executive compensation when it eliminated the corporate income tax deduction for executive salaries in excess of \$1 million, since the limitation was applicable only to non-incentive-based compensation (i.e., deductions could still be taken for compensation over \$1 million paid in the form of bonus, stock, or stock options tied to market performance measures).¹⁷ Moreover, an influential study by Michael Jensen and Kevin Murphy lent support to this view by documenting what they authors considered to be trivial responsiveness of executive compensation to stock performance.¹⁸ Jensen and Murphy viewed this disconnect to be a matter of considerable policy concern and advocated increasing equity incentive

¹⁶ See, e.g., Bengt Holmstrom, Moral Hazard and Observability 10 Bell J. Econ. 4 (1979); Bengt Holmstrom, Managerial Incentive Problems - A Dynamic Perspective, in Essays in Economics and Management in Honor of Lars Wahlbeck 209 (1982).

¹⁷ IRC §162(m). The provision was enacted in 1993 as part of the Omnibus Budget Reconciliation Act, at a time of public criticism of executive compensation. See, e.g., Nancy L. Rose & Catherine Wolfram, Regulating Executive Pay: Using The Tax Code To Influence Chief Executive Officer Compensation, 20 J. Labor Econ. S138 (2002). Some commentators have attributed the Enron and related corporate scandals to that legislation: The contention is that, because managers could only receive substantial compensation in the form of stock and stock options, they had incentives to engage in accounting manipulation to maintain high stock prices. E.g., Bruce Bartlett, Not So Suite: Clinton Tax Law is Problem, Not Greedy Execs, National Review online (Sept. 25, 2002), available at http://www.nationalreview.com/nrof_bartlett/bartlett092502.asp.

¹⁸ Michael C. Jensen & Kevin J. Murphy, Performance Pay and Top-Management Incentives, 98 J. Pol. Econ. 225 (1990). They calculated that CEO compensation changed by only \$3.25 for a \$1,000 change in stock value. *Id.* [I assume an *Id.* cite is appropriate here]

compensation.¹⁹

However, the tide of popular opinion has turned against equity and option-based compensation since Enron and other corporate accounting scandals came to light, fueled by repeated assertions in the media from journalists, commentators, and public and union pension funds that executive compensation is unreasonably high. This turn of events is not an altogether surprising development, as executive compensation has a long history of being targeted by populist press attacks after market declines.²⁰ The accounting scandals revived executive compensation as an issue because some scandal-ridden firms' executives reported gains in the range of tens and hundreds of millions of dollars from exercising stock options before their firms imploded, and those gains were now a sore point to, among others, investors whose stock was worthless and employees whose jobs were lost. The phenomenon also affected managers whose firms were not tainted by scandal but who had sizeable gains on option exercises while their shareholders' investments were tanking in the market decline following the terrorist attacks on September 11, 2001, a decline that continued throughout the revelations of accounting frauds in 2002.

Nevertheless, managerial incentive alignment through equity ownership has not been entirely discredited or jettisoned as an important mechanism of corporate governance, even by those who consider executive compensation excessive. The most severe critics of executive compensation have advocated structural fixes, changes that would give shareholders greater

¹⁹ Michael C. Jensen & Kevin J. Murphy, CEO Incentives: It's Not How *Much* You Pay But *How*, 3 J. Applied Corp. Fin. 36 (Fall, 1990).

²⁰ See Michael C. Jensen & Kevin J. Murphy, Performance Pay and Top-Management Incentives, Working Paper 43 (June 4, 1989) (listing newspaper headlines attacking high executive compensation from the 1980s), available at <http://www-rcf.usc.edu/~kjmurphy/jmjpe.pdf>; Joel Seligman, The Transformation of Wall Street 25-26 (rev. ed. 1995) (example of how a critical focus of the Pecora hearings that provided the basis for federal securities regulation in the 1930s was the compensation of bank executives).

control in director elections, rather than the elimination of incentive pay altogether.²¹ And the Council of Institutional Investors (CII), an association of pension funds that lobbies on corporate governance, issued a policy statement on executive compensation that recommends restrictions on the form and amount of incentive compensation but not its abandonment.²² Most recently, the focus of institutional investor activist attention has been to require shareholder approval of the chief executive officer's (CEO) compensation, by means of shareholder proposals sponsored most frequently by union funds, an approach that would be mandated for all public companies under legislation passed in the U.S. House of Representatives.²³

B. Governance Mechanisms and Firm Performance

Despite widespread belief that the governance mechanisms described above improve corporate functioning, the empirical literature investigating the effect of individual corporate governance mechanisms on corporate performance has not been able systematically to identify positive effects and is, at best, inconclusive. There have been innumerable studies examining the impact of board composition on performance, and the decisive balance of studies finds no relation between director independence and performance, whether measured by accounting or stock return measures.²⁴ Similarly, most studies seeking to measure the impact on performance

²¹ See Lucian Bebchuk & Jesse Fried, Pay without Performance 189-216 (2004). Their belief is that such institutional modifications will provide incentives to reduce compensation by facilitating the election of directors who approve either smaller compensation packages for management or the use of incentive compensation keyed to relative performance rather than general stock market movements.

²² See Council Policy on Executive Compensation (Apr. 11, 2006), available at <http://www.cii.org/policies/2006%20Policies%20Executive.pdf>.

²³ The Shareholder Vote on Executive Compensation Act, H.R. 1257, 110th Cong., 1st Sess., was passed on April 20/2007 by a vote of 269 to 134. See 153 Cong Rec. H3713 (roll call no. 244). The Senate has not acted on the bill.

²⁴ For literature reviews see, e.g., Sanjai Bhagat & Bernard Black, The Uncertain Relationship Between Board Composition and Firm Performance, 54 Bus. Law. 921 (1999); Roberta Romano, Corporate Law and Corporate Governance, 5 Indus. & Corp. Change 277, 284-90 (1996). In fact, in a few instances, researchers find a positive impact on performance from the presence of inside, rather than outside, directors. E.g., Bhagat & Black, *supra*; April Klein, Firm Performance and Board Committee Structure,

of shareholder activism through shareholders proposals find no significant stock price effect from that activity.²⁵ When negotiations over proposals that result in the proposal's withdrawal have been studied, the findings are all over the map with respect to statistical significance, varying with proposal and proponent type, among other factors.²⁶ At the other end of the activism spectrum, however, proxy fights for board seats have significant positive price effects, whether or not challengers succeed.²⁷ The incentive effect from having to spend substantial resources of one's own to engage in such challenges, and the more significant organizational consequences that result from such costly efforts, no doubt, would appear to explain the differential performance effect of this activity.

The relation between voting rights and performance has not been as extensively studied as that of board composition, at least in part because most governance activists have focused their attention on the board. However, studies do show, not surprisingly, that voting rights are economically quite valuable: While differential voting rights are not particularly prevalent among U.S. firms, studies of corporations issuing dual class stock find significant premiums

41 J. L. & Econ. 275 (1998). The literature reviews by Bhagat and Black and Romano also summarize the results of the many studies examining whether independent boards make different decisions from nonindependent boards, and whether the outcomes benefit shareholders, and here the data are mixed, with occasional examples of independent boards outperforming nonindependent ones. For example, studies have found a higher probability of a CEO's termination after poor performance when a majority of directors are independent, and positive price effects from the adoption of poison pills when a majority of the board is independent. See Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 J. Fin. Econ. 431 (1988); James A. Brickley et al., *Outside Directors and Adoption of Poison Pills*, 35 J. Fin. Econ. 371 (1994).

²⁵ For literature reviews see e.g., Bernard Black, *Shareholder Activism and Corporate Governance in the United States* in 3 *The New Palgrave Dictionary of Economics and the Law* 459 (Peter Newman, ed. 1998); Romano, *supra* note 10. The results in the literature are mixed concerning whether shareholder proposals result in firms' undertaking significant structural changes or governance reforms. See *id.* at 219-221.

²⁶ See Romano, *supra* note 10, at 209-19 (review of empirical literature on proposal negotiations).

²⁷ See, e.g., Romano, *supra* note 10, at 182, 221.

accorded to the voting shares (where both classes trade).²⁸ Moreover, there is some evidence that the closer the fraction of insiders' voting rights is to their fraction of economic ownership (dividend rights), on other words, the closer the voting rights approximate one-share one-vote, the higher the value of the firm.²⁹

Because voting rights are incidental to ownership, studies investigating the relation between ownership and performance can be viewed (at least in firms with only one class of stock) as equivalent to examining the relation between voting rights and performance. Several such studies have found nonlinear relations between insider stock ownership and performance.³⁰ That is, for small-scale blocks there are positive valuation effects (presumably from monitoring), but as control increases, the benefits from blockholding decrease, either because there are no economies of scale from blockholding or, the thesis often advanced in the academic literature, because the benefits are offset by potential expropriation.³¹ In either scenario, lower firm values result.

A similar relation has not, however, been consistently detected for outside block ownership.³² A comprehensive study of relational investing (outsiders holding large blocks for

²⁸ E.g., Luigi Zingales, What Determines the Value of Corporate Votes?, 110 Q. J. Econ. 1047 (1995). Zingales attributes cross-country premia differentials to the protection the legal regimes offer to the public (noncontrolling) shareholders.

²⁹ Paul A Gompers, Joy Ishii & Andrew Metrick, Extreme Governance: An Analysis of Dual-Class Firms in the United States (2006), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=562511. The relation is significant in only some model formulations.

³⁰ E.g., Randall Morck, Andrei Shleifer & Robert W. Vishny, Management Ownership and Corporate Performance: An Empirical Analysis, 20 J. Fin. Econ. 293 (1988); John J. McConnell & Henri Servaes, Additional Evidence on Equity Ownership and Corporate Value, 27 J. Fin. Econ. 595 (1990). There is some evidence of a similar nonlinear effect for dual class firms as well. Gompers et al., supra note 25. In Part II infra, we discuss a serious methodological issue regarding these studies' tests, the endogeneity between inside ownership and the valuation measure used in the studies.

³¹ See Mork et al., supra note 30 at 294 (listing articles adopting offsetting expropriation thesis).

³² Morck et al., supra note 26 (similar relation); McConnell & Servaes, supra note 26 (no relation). But in a study controlling for growth opportunities, McConnell and Servaes then find a similar nonlinear relation holds for outside as for inside blockholdings. John J. McConnell & Henri Servaes, Equity Ownership and

the long term) did not identify a systematic positive performance effect: The relation was positive only in the late 1980s when the level of hostile takeover activity was high.³³ There have been other efforts at measuring the benefit of outside blockholding as a governance device that find stronger results: Several studies have found positive price effects upon the formation of outsider blocks.³⁴ However, those studies' findings can be reconciled with the results of the relational investor study, in that the blocks whose formation was under study in the former research were held by investors with reputations for engaging in hostile acquisitions. The source of the gains in both studies, accordingly, would appear to be related to the same phenomenon, corporate restructuring: in the case of block formations, market expectations of potential takeover premiums, which incorporate gains acquirers expect to recoup from restructuring; and in the case of relational investments, blockholders "encouraging restructuring that translated . . . into better stock market performance."³⁵

the Two Faces of Debt, 39 J. Fin. Econ. 131 (1995).

³³ Sanjai Bhagat, Bernard S. Black & Margaret M. Blair, Relational Investing and Firm Performance, 27 J. Fin. Res. 1 (2004) (examining relational investing over the 13-year period 1983-95).

³⁴ For a literature review see, e.g., Gregg A. Jarrell, James A. Brickley & Jeffrey M. Netter, The Market for Corporate Control: The Empirical Evidence Since 1980, 2 J. Econ. Persp. 49, 63 (Winter 1988) (results on block formation). These studies were of greenmail, the takeover defensive tactic in which corporations repurchase potential bidders' shares at a premium, not available to other shareholders, to thwart a hostile bid; the positive price effects upon the announcement of the formation of the repurchased blocks outweighed the negative price effects upon the announcement of the blocks' repurchases. Similarly, more recent studies of the impact of hedge fund block ownership find positive price effects on the announcement of the initial block investment and/or the initiation of activism, while much of their activism takes the form of proxy fights or otherwise results in firm level changes, such as CEO turnover, and increased payouts and operating performance. E.g., Nicole M. Boyson & Robert M. Mooradian, Hedge Funds as Shareholder Activities from 1994-2005 (2007), available at <http://ssrn.com/abstract=992739>; Alon Brav, Wei Jiang, Frank Partnoy & Randall S. Thomas, The Returns to Hedge Fund Activism, ECGI - Law Working Paper No. 098/2008, available at <http://ssrn.com/abstract=1111778>, J. Fin. (forthcoming 2008); Nick A. Stokman, Influences of Hedge Fund Activism on the Medium Term Target Firm Value (2007), available at <http://ssrn.com/abstract=1019968>; April Klein & Emanuel Zur, Entrepreneurial Shareholder Activism: Hedge Funds and Other Private Investors, ECGI - Finance Working Paper no. 140/2006, available at <http://ssrn.com/abstract=913362>, J. Fin. (forthcoming 2008).

³⁵ Bhagat et al., supra note 28, at 27.

The literature on the performance effects of insider stock ownership, particularly in relation to executive compensation, is less extensive than that on board composition. A few studies have found a positive price effect from the announcement of adoption of stock option compensation plans,³⁶ and other studies have found a positive relation between management compensation, particularly the equity component, and performance.³⁷ Studies of the impact of director stock ownership similarly have ambiguous findings; in part the difference depends on the ownership calculation. While some studies find no significant relation between performance and ownership, calculated as the percentage of shares owned by outside directors,³⁸ Sanjai Bhagat and Brian Bolton find a significant positive relation, using as the governance measure, the dollar value of the stock ownership of the median outside director.³⁹ They provide two

³⁶ E.g., Richard A. DeFusco, Robert R. Johnson & Thoms S. Zorn, The Effect of Executive Stock Option Plans on Stockholders and Bondholders, 45 J. Fin. 617 (1990); Angela Morgan & Annette Poulsen, Linking Pay to Performance: Compensation Proposals in the S&P 500, 62 J. Fin. Econ. 489 (2001) (significant positive price effects, except for high dilution plans, where reaction insignificant). But see James A. Brickey, Sanjai Bhagat & Ronald C. Lease, The Impact of Long-range Managerial Compensation Plans on Shareholder Wealth, 7 J. Accounting & Econ. 115 (1985) (positive effect of long-term compensation plans but no significant reaction to plans with option component); Kenneth J. Martin & Randall S. Thomas, When is Enough, Enough? Market Reaction to Highly Dilutive Stock Option Plans and the Subsequent Impact on CEO Compensation, 11 J. Corp. Fin. 61 (2005) (insignificant stock price effects for full sample of plans, but significant negative reaction to plans with high levels of potential dilution).

³⁷ Hamid Mehran, Executive Compensation Structure, Ownership, and Firm Performance, 38 J. Fin. Econ. 163 (1995) (positive relation between performance and equity compensation); Kevin Murphy, Corporate Performance and Managerial Remuneration: An Empirical Analysis, 7 J. Acct & Econ. 11 (1985) (positive relation between performance and total compensation).

³⁸ E.g., Mehran, *supra* note 32.

³⁹ Sanjai Bhagat & Brian Bolton, Corporate Governance Indices, University of Colorado working paper (2007). Because most boards today consist almost entirely of independent directors, the median voter on the board is almost certain to be an outside director. E.g., James S. Linck, Jeffrey M. Netter & Tina Yang, The Determinants of Board Structure 36-37 (2007), available at <http://ssrn.com/abstract=729935> (average board has 66% outsiders, 6931 firms over 1990-2004, with 22% of firms having majority of insiders, with the respective percentages for large firms 73% and 9%, and for small firms 59% and 36. Moreover, given most firms' policies on director stock ownership (mandating a targeted ownership amount within five years of appointment), see, for example, the company guidelines of an older New York Stock Exchange-listed company, McDonald's Corp. (adopted 1997, revised 2007), available at http://mcdonaldsemail.com/corp/invest/gov/ownership_guide/director_stock.html; and of a newer Nasdaq-traded company, Net Gear, Inc. (adopted 2005), available at

rationales for the merits of their ownership metric. First, it is theoretically consistent with the political economy literature that identifies the median voter as the key (marginal) decisionmaker. Second, it is a more plausible benchmark for measuring the incentive effects of ownership because directors, as economic agents, are more likely to focus on policies' impact on the dollar value of their holdings in the company rather than on their percentage ownership.⁴⁰

In sum, the empirical literature focusing on individual governance mechanisms has not consistently identified a relation between governance and performance. But the appropriate conclusion to draw from this extensive line of research is not necessarily that efforts at improving corporate governance are a waste of time and effort. Rather, there are limitations with a research design that examines the effect on performance of only one dimension of a firm's governance when governance mechanisms are numerous and interaction effects are quite probable. That is, no doubt, a factor contributing to the attention directed at governance indices, which combine multiple governance dimensions into one number. The more compelling reason for the success of indices, however, is, in all likelihood, the elegant simplicity of having one summary number for capturing the multiple dimensionality of governance⁴¹

C. Aggregated Measures of Corporate Governance: Governance Indices

The corporate governance indices that are currently in use by academics and commercial

<http://files.shareholder.com/downloads/NTGR/0x0x92124/8b3d1703-9706-46f6-a7e7-66cd66c66240/StockOwnershipGuidelines.pdf>; unless there is wide variation in the year of appointment on a board, there is not likely to be large variation in the size of the holdings across the outside directors (excluding, of course, a director employed by an outside blockholder, whose shares are attributed to the individual). See David Yermack, Remuneration, Retention and Reputation Incentives for Outside Directors, 59 J. Fin. 2281 (2004) (new directors hold few shares compared to directors on board more than 5 years; over 25% of directors on board less than 5 years).

⁴⁰ Id. The incentive effect can be illustrated by the following simple example. Suppose that Director A owns .01% equity stake in a \$10 billion company, while Director B owns a 0.1% equity stake in a \$100 million company. A's stake equates to a \$1 million equity ownership, whereas B's stake equates to a \$100,000 equity ownership. All other things being equal, A is likely to devote more time and attention to her board responsibilities than B.

⁴¹ The import of this feature of indices is discussed further in Part III.

vendors vary considerably with respect to which features of firms' corporate governance are deemed sufficiently important to be included. The initial foray into creating an index was an academic inquiry, but this line of research has rapidly morphed into commercial products that are marketed primarily to institutional investors seeking information about the quality of firms' corporate governance, as well as to firms wishing to signal governance quality to investors. Because our analysis of comparative performance of governance indices focuses on academic indices, we devote greater attention to those indices than to commercial products.

1. *Gompers, Ishii, and Metrick "G" index*

The creation of corporate governance indices began with GIM's research, which was published in 2003 but widely circulated in 2001.⁴² GIM constructed their index from data on the governance characteristics of over 1,000 firms, including most large public corporations (the Fortune 500 and Standard & Poor's 500), compiled by the Investor Responsibility Research Center (IRRC), a nonprofit research group that serves institutional investors.⁴³ Because IRRC's clients had become active in corporate governance in order to oppose takeover defenses in the 1980s, most of the governance features tracked by the IRRC are defensive tactics. The features consist of 22 provisions in firms' corporate documents (17 of which are takeover-related) and six types of state takeover statutes. However, because of overlaps between tracked provisions and statutes, the number of distinct items is 24.⁴⁴ Moreover, the firm-level provisions tend to cluster;

⁴² Paul Gompers, Joy Ishii & Andrew Metrick, Corporate Governance and Equity Prices, 118 Q.J.Econ. 107 (2003).

⁴³ *Id.*

⁴⁴ The specific provisions are identified in Appendix A. GIM note that they supplemented the IRRC firm-level data for coverage under takeover statutes with other sources on state statutes. *Id.* at 112-13. The publication years of IRRC governance data are 1990, 1993, 1995, and 1998. *Id.* at 110. In the analysis relating governance to performance, because index values are not available for years when no data were collected, GIM only reset the governance portfolios in the four publication years, which is equivalent to using the values from the last available IRRC volume for the missing years. *Id.* at 124. The IRRC

that is, correlations across most of the 22 firm-level provisions are positive, many significantly so.⁴⁵

From these data, GIM construct a governance index that they consider to reflect the “balance of power between shareholders and managers.”⁴⁶ Relying on the IRRC’s judgment as to which corporate governance mechanisms investors consider to be important, for each firm GIM add up the number of provisions that the firm has of the 24 items, assigning one point for each provision that they view as restricting shareholder rights, and one point for the absence of either of two provisions that they view as constraining manager power and thereby enhancing shareholder rights.⁴⁷ GIM thus equally weight the governance features tracked by IRRC in fashioning their measure of corporate governance quality. The sum of the components is the governance or “G” index.⁴⁸

GIM group sample firms into ten portfolios in relation to their “G” scores, approximating deciles of governance quality.⁴⁹ They then examine the relation between the firms’ governance quality and several measures of performance: stock returns; Tobin’s Q; and three accounting measures, net profit margin, return on equity, and sales growth.⁵⁰ The examination of the

obtains the governance data from public information sources, such as SEC filings, and the number of firms covered increased over the period. *Id.* at 111.

⁴⁵ Of 231 total pairwise correlations, 169 are positive and of those 111 are significant, whereas only 9 of the remaining 62 negative correlations are significant. *Id.* at 111.

⁴⁶ *Id.* at 109.

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ Although the G index has a potential range of 0 to 24, the actual range is from 2 to 17, with higher scores indicating lower quality. *Id.* The “G” portfolio cutoffs are (i) less than 6 (the “Democracy” portfolio, consisting of firms with the strongest shareholder rights), (ii) 6 through 13, and (iii) greater than 13 (the “Dictatorship” portfolio, consisting of firms with the weakest shareholder rights). *Id.* at 115-16. We use the word “approximate” deciles because the number of firms in each of the ten portfolios is not identical. Both the mean and median G score are 9. *Id.*

⁵⁰ *Id.* Stock returns are computed using a standard four-factor model that adjusts individual stock returns for market movements, size and market-to-book factor returns, and momentum effects. *Id.* Tobin’s Q is the ratio of a firm’s market value to the replacement cost of its assets (in practice computed from book

relation between corporate governance and performance focuses on a comparison between the highest and lowest G-portfolios, which they call, respectively, the “Dictatorship” and “Democracy” portfolios.⁵¹ GIM find a significant relation between the governance index and stock returns and Tobin’s Q: Firms with the poorest corporate governance consistently underperform those with the best corporate governance.⁵² In particular, quantifying the effect, the impact of governance on performance appears to be substantial: An investment strategy of buying the Democracy portfolio stocks and selling the Dictatorship portfolio stocks would have earned abnormal returns of 8.5 percent a year or a one-point increase in G is associated with an 11.4 percent decrease in Tobin’s Q by the end of the sample period.⁵³

The finding of a relation between the G index and subsequent performance does not, of itself, indicate that better corporate governance caused superior performance. GIM consider three possible explanations of their finding: (i) investors underestimated the cost of poor governance at the outset of the period under study (1990, the first year of the sample); (ii) managers expecting poor performance in the 1990s adopted governance devices in the 1980s that would restrict shareholder rights (i.e., features that GIM, along with the IRRC, consider to be poor corporate governance); or (iii) poor governance is correlated with other unspecified firm characteristics that cause the firms’ subsequent abnormal performance in the 1990s.⁵⁴ They attempt to test which hypothesis is correct and find some evidence supporting the first hypothesis and the third (industry classification explains between one-sixth to one-third of the abnormal

values); ratios greater than 1 suggest that a firm is generating excess profits, and therefore is a good performer. The computation of Tobin’s Q and the accounting measures are industry-adjusted. Id.

⁵¹ Id.

⁵² Id.

⁵³ Id.

⁵⁴ Id.

performance).⁵⁵ They conclude with an appropriately cautionary statement regarding the use of the G index that calls for further study to determine which hypothesis is correct because of the hypotheses’ “starkly different policy implications.”⁵⁶

2. *Bebchuk, Cohen, and Ferrell E Index*

Lucian Bebchuk, Alma Cohen, and Allen Ferrell (BCF) advanced a competing governance index to the G index, one composed of a subset of G Index factors.⁵⁷ Accepting as the most probable explanation of GIM’s results that corporate governance positively affects performance, BCF sought to construct what they consider to be a better motivated index.⁵⁸ They selected six of the IRRC takeover-defense provisions that they considered to be the most entrenching of managers given their understanding of the operation of corporate law.⁵⁹ These provisions include poison pills and staggered boards (the combination of which Bebchuk has declared to be the most potent of defenses),⁶⁰ as well as golden parachutes. BCF’s inclusion of golden parachutes as one of the more formidable defenses is, however, problematic because there is a theoretical and empirical literature at odds with BCF’s contention, and that, in fact, suggests that golden parachutes facilitate takeovers.⁶¹ In constructing their index, BCF followed GIM’s approach, according equal weight (one point) to the presence of any of the six

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ Lucian Ayre Bebchuk, Alma Cohen & Allen Ferrell, *What Matters in Corporate Governance?* (2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=593423.

⁵⁸ *Id.*

⁵⁹ *Id.* at 7. Appendix A contains the details of the six provisions.

⁶⁰ Lucian Bebchuk, John Coates IV and Guhan Subramanian, *The Powerful Antitakeover Force of Staggered Boards: Theory, Evidence and Policy*, 54 *Stan. L. Rev.* 887 (2002).

⁶¹ See, e.g., David Baron, *Tender Offers and Management Resistance*, 38 *J. Fin.* 331 (1983) (model in which golden parachutes encourage hostile bids); Richard Lambert & Donald Larcker, *Golden Parachutes, Executive Decision-Making and Shareholder Wealth*, 7 *J. Accounting & Econ.* 179 (1985) (positive price effects upon adoption of golden parachute defense).

provisions.⁶² The index is called the “Entrenchment” or “E” index.

BCF expect their index to outperform GIM’s as a predictor of corporate performance, because it contains provisions that, in their view, are most likely to thwart a hostile takeover.⁶³ The six provisions that BCF identify as most entrenching also turn out to be the only ones of the 24 components of the G index that are statistically significant in regressions on performance when the estimation is separately undertaken for each component.⁶⁴ Accordingly, BCF conclude that the correlation between governance and performance in GIM’s study is driven entirely by the subset of governance factors in the E index.⁶⁵

Examining the relation between the E index and industry-adjusted Tobin’s Q and stock returns (the same performance measures as used by GIM but with a few more years of available data), BCF confirm the correlation between governance and future performance found in GIM’s study.⁶⁶ They also confirm GIM’s finding that a portfolio of low entrenchment/good governance (GIM’s Democracy) firms outperforms a portfolio of high entrenchment/poor governance (GIM’s Dictatorship) firms.⁶⁷

BCF conclude that the E index is preferable as a measure of the quality of a firm’s corporate governance to the G index: It is more parsimonious, better motivated, and outperforms the G index.⁶⁸ Although GIM’s governance index has been extensively used in the academic literature while BCF’s index has not, BCF’s index has made some commercial inroads. Glass

⁶² Bebchuk et al., *supra* note 57.

⁶³ Given the later date of their study, they have two additional years of IRRC governance data than GIM. For years when no IRRC volume was published, BCF equate firms’ index value to the value from the last published volume, as do GIM. As BCF note, this assumes that firms’ governance provisions are unchanged over the interval between IRRC publications, the practice adopted by GIM. *Id* at [pin].

⁶⁴ *Id* at [pin].

⁶⁵ *See id.* At [pin].

⁶⁶ *Id* at [pin].

⁶⁷ *Id* at [pin].

⁶⁸ *See id.* At [pin].

Lewis & Company, which provides research and advisory services to institutional investors, markets a governance ranking, termed the “Board Accountability Index,” that is derived from BCF’s research. The Board Accountability Index uses five of the six components of the E index, and Glass Lewis markets it as derived from the “fact” that “good governance can improve shareholder returns.”⁶⁹ BCF are more cautious regarding the use of their results than are Glass Lewis, however. BCF do not conclude that they have demonstrated causation; rather, they state that the evidence is “suggestive” that the set of entrenching governance provisions that they have identified affect performance.⁷⁰

3. *Brown and Caylor Gov-Score Index*

Lawrence Brown and Marcus Caylor created a more extensive governance index than the G and E indices, using firm-level governance information obtained from ISS.⁷¹ Brown and Caylor’s index, which they call “Gov-Score,” is a sum of 51 factors (of 61 factors and 3 combination measures collected by ISS), nine of which are in the G index, and a tenth, incorporation in a state with a takeover statute, which is a composite of the four state takeover

⁶⁹ Glass Lewis describes its governance index, whose use it advocates for formulating an investment strategy, as follows:

Investing in companies with good governance can improve shareholder returns, as many have suspected for years. This is no longer just a matter of intuition. It’s a fact. A study by Harvard Law School professor Lucian Bebchuk and his colleagues identified a statistically significant and strong correlation, over a long period of time, between stock performance and the degree to which boards are accountable to their shareholders. Based on this research, Professor Bebchuk and Dr. Cohen, in collaboration with Glass, Lewis & Co., have developed a governance-enhanced S&P 500 index, the Board Accountability Index (BAI). The BAI consists of all companies in the S&P 500. It uses a modified market-cap weighting algorithm that adjusts a company’s weight based on the presence or absence of five critical corporate governance features identified in the study of Bebchuk, Cohen, and Ferrell.

Glass Lewis & Co., Board Accountability Index: Governance-Enhanced S&P 500 Index (2008), at <http://www.glasslewis.com/solutions/bai.php>. The provision from the BCF index that Glass Lewis omits is a supermajority requirement (hence a restriction) on charter amendments. See *id.*

⁷⁰ Bebchuk et al., *supra* note 42, at 40.

⁷¹ Lawrence D. Brown & Marcus L. Caylor, Corporate Governance and Firm Valuation, 25 *J. Acct & Pub. Policy* 409 (2006).

statute components of the G index.⁷² Following BCF's refinement of the G Index, Brown and Caylor also constructed a subindex "Gov-7," consisting of seven of the components in Gov-Score.⁷³

The Gov-Score index has the potential advantage, noted by its creators, of providing a superior measure of firms' governance quality because it includes a broader set of components of corporate governance than takeover defenses, which comprise the bulk of the G and E indices.⁷⁴ It is also derived from a larger database than are the other two indices (over 2,000 firms).⁷⁵ But it does have a comparative disadvantage: It was constructed from only one year of data, 2003 (the first year in which ISS began collecting the information), in contrast to the multiple years of IRRC data used for the G and E indices.⁷⁶ On the other hand, because Gov-Score uses 2003 data, it measures firms' corporate governance characteristics in the post-Enron environment, in contrast to the other two indices, which are derived from pre-Enron data. Gov-Score is therefore arguably more germane for contemporary policy considerations.⁷⁷

Brown and Caylor examined the relation between the Gov-Score and Tobin's Q, one of

⁷² Id. at 415 n.14. Gov-Score thus can range from 0 to 51, but as with the G index, the actual range, from 13 to 38, is substantially narrower than the theoretical range. [Is this stated in the Brown & Caylor article such that we can use an Id. cite here or is this your own independent conclusion, in which case we will forego a citation?] The mean score of sample firms is 22.52, with a standard deviation of 3.45. Id. at [pin]. Brown and Caylor use a point system that is the opposite of GIM and BCF, assigning one point to "good," as opposed to "poor," corporate governance practices, and consequently, a higher Gov-Score signifies higher quality corporate governance, in contrast to G and E index values. Id. at [pin]. Appendix A details the composition of the Gov-Score index.

⁷³ The components in Gov-7 are identified empirically, from the factors that are most strongly correlated with performance. Id. at [pin]. Two of the seven components are takeover defenses also in the G and E indices. See Appendix A.

⁷⁴ See Brown & Caylor, *supra* note 71, at [pin].

⁷⁵ Id. at 411, 413.

⁷⁶ Id. at [pin].

⁷⁷ The commercialization of governance ratings, discussed later in this section, has led both the IRRC and ISS to compile governance data more frequently: The IRRC data available online have been biennially updated, and the ISS data are annually updated, and have been backfilled for 2001, for its proprietary product.

the two performance measures emphasized by GIM and BCF. They did not adjust performance by industry, as did GIM and BCF, nor did they examine stock returns. They find that Gov-Score is significantly positively related to Tobin's Q, that is, that superior performance is associated with higher quality governance.⁷⁸

A major difference between Brown and Caylor's findings and those of the other two studies is the relation between takeover defenses and performance. Brown and Caylor found that board and compensation factors in their index are more highly associated with good performance than are most of the takeover defenses,⁷⁹ which defenses are the principal components of the G and E indices. They then disaggregated the index, and found that a subset of the 51 components drives the significant correlation between Gov-Score and Tobin's Q.⁸⁰ Identifying seven elements as consistently significant, they used those seven to form the Gov-7 governance index, which Brown and Caylor analogize to BCF's E index, both being parsimonious subsets of larger related indices.⁸¹ Brown and Caylor then investigated which of the two indices has greater predictive power, and, after eliminating the overlapping provisions (two components are in both the E-Index and Gov-7), they found that Gov-7 still has explanatory power while the E-index does not.⁸² Brown and Caylor were careful not to attribute causation to their findings. But they did conclude that it is preferable to use as a measure of governance quality, a small subset of factors in an index that consists of more dimensions than takeover defenses.⁸³

4. *Proprietary Governance Indices*

⁷⁸ Id. at [pin].

⁷⁹ See id. at [pin].

⁸⁰ Id. at [pin].

⁸¹ See id. at [pin].

⁸² Id. at 427.

⁸³ In this regard they consider their work as confirming the finding in Cremers and Nair, discussed in Part [pin], *infra*, that it is a combination of internal governance and external governance mechanisms that relate governance to performance. Id. at 430.

The commercial indices ranking public corporations' governance quality, which are provided by proxy advisory services,⁸⁴ differ distinctively from the academic ones on several important dimensions. First, firms' scores on the proprietary indices do not consist of summations of equally-weighted factors. Rather, commercial index providers vary the weights accorded different governance factors, using either their discretion regarding the importance of the factor or quantitative analyses to determine the appropriate weights.⁸⁵ Second, commercial indices deemphasize takeover defenses, in contrast to the indices constructed by GIM and BCF.⁸⁶ Some do not even include defenses as a governance factor, while others place greater weights on the non-takeover-related factors (internal governance measures such as board and executive compensation attributes).⁸⁷ Third, some commercial indices are relative rankings of firms in relation to other firms in their industry, market or geographic region, whereas the academic indices are absolute rankings of governance quality independent of the practices of comparable firms.⁸⁸ Finally, the leading provider by far of this type of service, ISS, updates the factors in its

⁸⁴ Commercial providers or proxy services whose governance measures are jointly summarized are ISS, Egan-Jones Proxy Services, GovernanceMetrics International, and The Corporate Library (TCL). Details on the specifics of these governance indices are in Appendix A. The proxy services offered by the firms vary, including research and recommendations on proxy voting, automated vote execution, recordkeeping and disclosure reporting for institutional investors. Some firms, and in particular the dominant market player, ISS, also provide governance and proxy consulting services to issuers.

⁸⁵ E.g., TCL's "Board effectiveness score" is a weighted average of seven governance components and an analyst adjustment that takes into account a personal assessment of governance quality, see <http://www.thecorporatelibrary.com/special/misc/OfficeMax.pdf> (hereafter TCL Rating Explanation); GovernanceMetrics' overall rating is derived from a sophisticated statistical algorithm assigning weights to various individual metrics in relation to other firms in its universe, see [http://www.gmiratings.com/\(hgwaa055h0jyiu55scbird45\)/about.aspx#methodlogy](http://www.gmiratings.com/(hgwaa055h0jyiu55scbird45)/about.aspx#methodlogy); and ISS assigns weights to the components of its Corporate Governance Quotient as a function of their correlations with several measures of firm performance, see <http://www.issproxy.com/pdf/CGQOverviewChanges.pdf> [hereinafter ISS Overview].

⁸⁶ Indeed, the governance index of the newest entrant into the market, Egan-Jones, does not even contain an express reference to takeover defenses. See <http://www.ejproxy.com/about.aspx>. Glass Lewis' index, which is derived from BCF's work and therefore not summarized in this section, is the one exception.

⁸⁷ E.g. Egan-Jones. See Appendix A for details on the components of the commercial indices.

⁸⁸ As described in Appendix A, this is true of the ratings provided by GovernanceMetrics and ISS.

index to capture trends in corporate governance. For example, it recently incorporated two items that have become the focus of activist institutional investor attention, majority voting for directors and option backdating, while eliminating option expensing (since expensing is now required).⁸⁹

The difference in index construction across academic and commercial creators can be best explained as a function of both expertise, which commercial providers believe they possess, and a differing analytical approach to governance. The academic index constructors intentionally sought not to make choices regarding the weights assigned to governance attributes. The rationale for this is twofold. First, the academics do not hold themselves out to be experts in assessing governance quality, compared to the vendors from which they acquired the data. And second, the academics desire to immunize their work from potential charges of “stacking the deck” for favorable results, compared to what would appear to be a more plausibly neutral approach, equal weighting of a large number of attributes identified by third-party governance experts. By contrast, commercial vendors are actively marketing governance expertise and therefore could be expected to exercise judgment on the weights accorded to the different components of an index as well as across firms, and such vendors are not vulnerable to “stacking the deck” charges.

Expertise is, in fact, a differentiating marketing strategy used by The Corporate Library (TCL). TCL provides both a board effectiveness rating (a governance quality assessment that follows a proprietary formula along the lines of the principles noted above, with a discretionary

⁸⁹ Institutional Shareholder Services Releases New CGQ Ratings Criteria, ISSmarketing@proxy.com (Nov. 13, 2006). The constant tweaking of the index could explain why ISS’ website discussion of the “performance metrics” used to determine the weights in the corporate governance quotient suggests that many of the correlations between its’ index’s components and firm performance measures are high, see ISS Overview, *supra* note 55, in contrast to Brown and Caylor’s finding that only a few of the ISS attributes were highly correlated with their performance measures, see *supra* note 49.

component and varying weights that are higher for internal governance features) and a compliance rating (constructed along the lines of academic indices by tallying the presence or absence of numerous specified good governance factors).⁹⁰ But TCL contends that the effectiveness rating is the preferred metric for assessing quality and discourages use of the compliance rating for that purpose (the compliance rating being provided for comparative purposes, to “evaluate compliance with traditional measures of corporate governance”).⁹¹ TCL faults the compliance rating for being a “best practices list” that takes a “one-size-fits-all approach” to governance, an approach that in its judgment is too limited to measure the quality of a firm’s governance.⁹²

II. Is there a Relation between Governance Quality and Performance?

Although the development of academic governance indices has given vitality to, if not sparked, the flourishing of a commercial market for indices, the academic literature that introduced indices has not satisfactorily answered the question whether there is a causal relation between governance and performance. Although GIM, BCF, and Brown and Caylor found positive associations between their indices’ rankings of firms’ governance quality and

⁹⁰ TCL Rating Explanation, supra note 55.

⁹¹ TCL Rating Explanation, supra note 55, at 29.

⁹² See id. at 8. TCL provides as evidence of the superiority of its effectiveness rating over the best practices approach that informs the academic indices’ construction that the Enron corporation received a low effectiveness rating but a high compliance rating. Id. at 29. Paul Rose, who agrees with the concern expressed by TCL that good corporate governance is not served by forcing uniformity in firms’ governance practices—as occurs when a governance quality metric depends on the presence of a set of specific governance mechanisms—considers the subjectivity of TCL’s effectiveness ranking to be one of its more attractive features, compared to the “objective” quantitative approach of other indices. See e.g., Rose, supra note 4. **[Are there other Rose articles that make the same claim, as the e.g. signal suggests, or should we drop the “e.g.”?]** Rose further suggests a subtle explanation for the difference between TCL’s subjective approach to governance and other commercially provided measures’ more objective, checklist approach: the fact that TCL does not offer consulting services to corporations and the other vendors (such as Glass Lewis and ISS) do. In his view, commercial vendors opt for an objective ranking in order to mitigate the potential conflict of interest in providing both ranking and consulting services, since by using objective criteria, it could be easier to support the “claim that [the] governance analysis is not affected by the provision of other services.” Id. at 907.

performance, correlations are, obviously, not causation, and subsequent work has even questioned whether a positive association truly exists. After reviewing key research indicating that the findings associating governance quality, as measured by the academic indices, with performance are not robust (meaning that the findings do not hold up when their assumptions are tested), we discuss econometric issues that complicate investigation of the relation between governance and performance. We then summarize the findings of a study by two of us that shows that when those econometric issues are addressed, the relative performance of governance indices is not always superior to single governance variables in predicting corporate performance.

A. Robustness of the Relation Identified by Academic Index Creators

GIM's findings of a significant correlation between governance and performance attracted a great deal of attention,⁹³ at least in part because the overwhelming balance of the literature on individual governance characteristics up to then had not identified a systematic relationship with performance.⁹⁴ If true, GIM's findings suggested, for example, that one could make money by trading on firms' publicly-disclosed governance characteristics, which would be inconsistent with market efficiency, a central tenet of modern financial economics. Not surprisingly therefore, financial economists sought to test the robustness of GIM's finding and of

⁹³ For example, although published in 2003, the article had already been cited in 50 articles in the Social Sciences Research database within three years (searched in Westlaw on June 3, 2006), and the rate of citation has not decreased over time, for it was cited in 152 articles two years later (searched in the ISI Web of Science on July 6, 2008). Another measure that indicates the work's continued influence is its position on the SSRN electronic abstract database. As of July 6, 2008, the working paper had over 8,000 downloads and is the 50th most downloaded paper (of over 150,000 papers available for downloading); nine months earlier it ranked 63rd with over 6,000 downloads, and 25 months earlier, it ranked 113th with over 4,000 downloads. The article also was awarded the 2002 Geewax, Terker & Company Prize in Investment Research for the best working paper by the Rodney L. White Center for Financial Research at the Wharton School of the University of Pennsylvania.

⁹⁴ See supra Part I.B.

their explanation of the data. Several of these studies found that the relation and the explanation do not hold up when more closely examined. We review three of the more important studies to convey a sense of the fragility of GIM's (and their progeny's) findings of a significant connection between governance indices and performance and, in doing so, to inject an element of realism into policy discussions relating to the adoption of an index-like approach to corporate governance regulation or investment decisionmaking.

1. *Lehn, Patro and Zhao: Causation runs from performance to governance*

Kenneth Lehn, Sukesh Patro, and Mengxin Zhao investigated the issue of causality concerning GIM's finding of a correlation between governance and performance by examining the relation between firms' performance in the 1980s, a period before the takeover defenses comprising the G index were adopted, and performance in the 1990s, the period of performance that GIM find is correlated with the G index.⁹⁵ The idea is that because governance mechanisms preventing takeovers were not in place in the early 1980s, valuation measures from that time period could not be affected by those governance devices.

Lehn et al. found that, after controlling for performance in the 1980s, the relation identified by GIM between governance and Tobin's Q in the 1990s disappears. The 1980s valuations (which measure performance in the 1980s) are correlated with both the 1990s governance measures and 1990s valuations.⁹⁶ Moreover, a regression to explain the G index is run on both lagged and leading values of Tobin's Q, and the lagged valuations from the 1980s explain the governance rating but the lead valuations from the 1990s do not.⁹⁷ The results were

⁹⁵ Kenneth Lehn, Sukesh Patro & Mengxin Zhao, *Governance Indices and Valuation: Which Causes Which?* (2006), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=810944

⁹⁶ Id. at [pin].

⁹⁷ Id. at [pin].

the same using BCF's E index.⁹⁸

Lehn et al. concluded that causation runs from performance to governance rather than the other way around.⁹⁹ Firms with low valuations (poor performers) in the early 1980s adopted defensive tactics in the late 1980s and continued to have low valuations thereafter in the 1990s.¹⁰⁰ Lehn et al. suggest two possible explanations for the association: one, low valued firms might be poorly managed and therefore more attractive takeover targets; and two, low valued firms might have fewer growth opportunities than other firms, and low growth firms might be more attractive takeover targets.¹⁰¹ In either scenario, the low-valued firms would be more likely to adopt takeover defenses, which adoption would affect the value of the G index. This runs counter to the common wisdom of governance indices, that adoption of takeover defenses—which adoption affects the value of the G index—leads to lower firm values.

2. Core, Guay, and Rusticus: Market anticipation of relation between governance and performance

John Core, Wayne Guay, and Tjomme Rusticus also questioned GIM's explanation of their findings and the issue of causation.¹⁰² Core et al. investigated what they considered a puzzle in GIM's study: the finding of a significant relation between governance and performance as measured by stock returns but not by accounting earnings.¹⁰³ They hypothesized that if the explanation for the findings is, as GIM suggest, that investors misperceived the

⁹⁸ Id. at [pin].

⁹⁹ See id. at [pin].

¹⁰⁰ Id. at 12. This is the hypothesis that GIM rejected of the three hypotheses that they proposed to explain their data.

¹⁰¹ Id. at [pin].

¹⁰² John E. Core, Wayne R. Guay & Tjomme O. Rusticus, Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations, 61 J. Fin. 655 (2006).

¹⁰³ See id. at [pin].

relation between governance and performance at the start of the period under study, then the market should be surprised if earnings are higher (lower) than expected for good (poor) governance firms or if takeover probabilities are higher (lower) than expected for good (poor) governance firms.¹⁰⁴

Using operating return on assets, which Core et al. noted the accounting literature considers to be the “more powerful measure” of operating performance,¹⁰⁵ rather than GIM’s accounting measure of return on equity, they document a significant negative relation between operating performance and the G index, in contrast to GIM.¹⁰⁶ Next, to determine whether the abnormal stock returns are due to investor surprise that firms with poor governance have lower performance, they examined the relation between the G index and analyst forecasts as well as earnings announcements.¹⁰⁷ Core et al. hypothesized that if investors misunderstood the effect of governance on performance, then they would have been surprised when the earnings of poorly (well) governed firms were low (high) relative to forecasted earnings.¹⁰⁸ Over a variety of intervals (one quarter to five years), Core et al. found that analysts’ forecasts predicted the poor performance of high G index (poor governance) firms.¹⁰⁹ The authors also found no difference in stock returns surrounding earnings announcements between poorly and well governed firms (low and high G index firms).¹¹⁰ These results suggest, Core et al. contended, that neither analysts nor investors were surprised by the performance of firms in relation to their

¹⁰⁴ Id. at [pin].

¹⁰⁵ Id. at 656.

¹⁰⁶ Id. at 668.

¹⁰⁷ Id. at [pin].

¹⁰⁸ Id. at [pin].

¹⁰⁹ Id. at 671.

¹¹⁰ Id. at 674-76.

governance.¹¹¹ The authors therefore disconfirmed the investor misperception hypothesis suggested by GIM.

Core et al. further conclude that differences in the probability of takeover, based on completed takeovers for their sample firms, do not explain the abnormal returns in GIM's study across the two extreme G index portfolios (the Democracy and Dictatorship portfolios).¹¹² In fact, the Dictatorship portfolio firms have a higher takeover probability in the mid 1990s than the Democracy portfolio firms, which have a higher takeover probability in the early and late 1990s.¹¹³ Moreover, the differences in annualized probabilities over the entire period are too small to explain the difference in abnormal returns that GIM report.¹¹⁴ Lastly, eliminating the acquired firms from the analysis does not eliminate the return differential across the two portfolios.¹¹⁵

What do they propose, then, as the explanation? They suggest that the GIM result might be time-specific. In examining the returns on the investment strategy hedging the two extreme portfolios (shorting the poor governance firms and buying the good governance ones) both over the period studied by GIM (1990s) and four subsequent years (2000-04), they find that all of the significant abnormal returns to the trading strategy occur from 1997-99, and that the relation does not hold up in the later interval, 2000-04.¹¹⁶ In fact, the value of the hedge portfolio sharply declines in that period (compared to its increase in GIM's period of study).¹¹⁷ This is because the returns to the Democracy portfolio (good governance firms) decreased in the four later

¹¹¹ See id. at [pin].

¹¹² See id. at [pin].

¹¹³ Id. at 677.

¹¹⁴ Id. at [pin].

¹¹⁵ Id. at [pin].

¹¹⁶ Id. at [pin].

¹¹⁷ Id. at [pin].

years.¹¹⁸ Core et al. therefore conclude that the data do not support the hypothesis that poor (good) governance causes poor (good) performance.¹¹⁹

3. *Cremers and Nair: Effect of interaction of governance mechanisms on performance*

Finally, Martijn Cremers and Vinay Nair also find that the relation between the G index and performance is not robust. They studied the relation between the G index, which they emphasized is a score of external governance mechanisms (exposure to the market for corporate control) and internal governance represented by institutional block ownership, building on the governance literature that considers blockholding to be an important monitoring mechanism.¹²⁰ They constructed portfolios of firms sorted according to their rank on the G index as well as their rank with regard to block ownership, and examined the relationship between firms' governance and their performance.¹²¹ Cremers and Nair found that the relation between governance and performance identified by GIM is no longer independently significant when a block ownership variable is included in the analysis.

In particular, they found that neither governance mechanism alone affects performance but that specific combinations do, an interaction effect implying that the mechanisms are complements rather than substitutes.¹²² Specifically, blockholder ownership is important only

¹¹⁸ Id. at [pin].

¹¹⁹ Id. at 685.

¹²⁰ K. J. Martijn Cremers & Vinay B. Nair, *Governance Mechanisms and Equity Prices*, 60 *J. Fin.* 2859 (2005). Block ownership is measured as either the percentage of shares held by the largest institutional blockholder, or the percentage of shares held by public pension funds considered to be activist investors. Id. at [pin]. They also construct an alternative takeover index ("ATI") that consists of a subset of G index factors that are the takeover defenses they consider the more effective mechanisms for preventing hostile bids from their reading of the legal literature (blank check preferred, staggered boards, and either restrictions on shareholders' right to call shareholder meetings or to act by written consent), in order to minimize any concern that the G index is not properly characterized as solely proxying for external governance. Id. at [pin]. The results are unchanged when firms are ranked by the ATI index rather than the G index. Id. at [pin].

¹²¹ Id. at [pin].

¹²² It should be recalled that as discussed in the text and accompanying note 67 *supra*, GHS find that a

for firms without takeover defenses (lowest quartile G index firms), and the absence of takeover defenses is important only for firms with an active blockholder (highest quartile of block ownership); those complementary portfolios are the only portfolios that can be used to create trading strategies that generate abnormal profits.¹²³ With more years of performance data, in contrast to GIM, Cremers and Nair found no effect on performance from takeover defenses alone (the G index) and concluded that both forms of corporate governance matter for future performance.¹²⁴

Cremers and Nair considered several explanations for their finding in addition to the investor learning explanation offered by GIM (that investors did not understand the impact of corporate governance in 1990, the outset of GIM's data period). The alternatives include whether the trading strategy's abnormal returns are (i) unrelated to fundamental performance and instead derived from the market's view of corporate governance; (ii) due to abnormal returns accruing to future targets or acquirers on the acquisition announcement dates; (iii) or associated with an omitted risk factor that may or may not be related to governance.¹²⁵ To test these hypotheses, they examined the relation between their two governance variables and other performance measures (accounting measures and Tobin's Q).¹²⁶ The findings using accounting measures duplicate those for stock returns, which they view as inconsistent with the first alternative, that governance is unrelated to changes in performance, although they note that this

different internal governance mechanism, the board of directors, substitutes for the market for control, as opposed to the internal governance device examined by Cremers and Nair and found to be a complement, institutional blockholding.

¹²³ Id. at [pin].

¹²⁴ Id. at [pin].

¹²⁵ Id. at 2883-89.

¹²⁶ Id. at [pin].

does not demonstrate causality.¹²⁷ They also reject the second hypothesis because when targets and acquirers are removed from the portfolios the findings are unchanged.¹²⁸

The results involving Tobin's Q are somewhat different. While Cremers and Nair find that firms with only one high quality governance mechanism (high block ownership or low takeover defenses) do not exhibit abnormal stock returns, they find that those firms have higher Tobin's Q valuations.¹²⁹ The authors interpret these findings as evidence that investors "price the importance of individual governance mechanisms correctly," and hence as the explanation for why there are no abnormal returns.¹³⁰ Considering the findings regarding trading strategies of the complementary portfolios and the Tobin's Q valuations, they winnow down the plausible explanations of the data to two, GIM's learning hypothesis, or the third alternative involving unspecified risk factors. To shed some light on which alternative hypothesis might be correct, they examine the relation between the different combinations of governance portfolios and the variability of performance, as a proxy for risk.¹³¹ They find that the complementary portfolios (those comprised of firms with high quality governance on both dimensions) are indeed associated with more variable performance measures than portfolios where only one such mechanism of good governance is present.¹³²

Cremers and Nair interpret these data as providing support for the omitted risk factor explanation of their results, that is, that the abnormal returns from trading on the governance portfolios are an artifact of the higher discount rate investors applied to these firms because of

¹²⁷ See *id.* at [pin].

¹²⁸ *Id.* at [pin].

¹²⁹ *Id.* at [pin].

¹³⁰ *Id.* at 2889.

¹³¹ *Id.* at [pin].

¹³² *Id.* at 2888-89.

their greater risk.¹³³ They conclude that it is the combination of the quality of a firm's internal and external governance devices that is associated with superior performance, and not a firm's defenses alone (what GIM's and BCF's indices measure),¹³⁴ a finding, as earlier noted, replicated in Caylor and Brown's comparative analysis of the Gov-Score and Gov-7 indices.

B. Why Might a Single Governance Mechanism Be Preferable to an Index?: Complementarity versus Substitutability of Governance Mechanisms.

Although the dominant approach to evaluating the quality of a firm's corporate governance today is to construct an index comprised of multiple dimensions of a firm's governance structure, some governance scholars still consider specific board characteristics to be the critical determinants of corporate governance.¹³⁵ Board factors are also emphasized by the providers of commercial indices over the takeover-related governance factors emphasized in most academic indices. This raises the fundamental question whether a single board characteristic could be as effective a measure of corporate governance as indices that consider multiple measures of corporate charter provisions and board characteristics. While this is an empirical question, it is plausible on both theoretical and methodological grounds for a single board characteristic to be superior or as effective a measure of corporate governance as an index. If a single board characteristic could dominate an index as a proxy for good governance, then it could be a more parsimonious proxy for predicting performance. Moreover, it would diminish the need and/or attractiveness to institutional investors of using commercial services to measure a portfolio firm's governance quality. We therefore think it is useful to set out the rationale for

¹³³ See id. at [pin].

¹³⁴ Id. at [pin].

¹³⁵ Bhagat & Bolton, supra note 34 (directors' stock ownership); Benjamin E. Hermalin & Michael S. Weisbach, Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Evidence, 9 Econ. Policy Rev. 7 (2003) (director independence).

why a single governance mechanism related to the board might fare at least as well as an index in evaluating a firm's overall governance quality.

Under what theory of the firm could one characteristic be preferred to many to describe a firm's quality of governance? Corporate law provides a board of directors with the authority to make, or at least ratify, all important firm decisions, including decisions about investment policy, management compensation policy, and board governance itself. The board's pivotal role suggests focusing on its attributes in order to identify a single governance variable that might serve as an alternative to an index. It is theoretically possible, and intuitively plausible, that an independent board, or board members with stock ownership, will have adequate incentives to oversee important corporate decisions and monitor management action implementing those decisions.¹³⁶ Accordingly, board independence or outside board members' stock ownership would appear to be excellent candidates for a single characteristic that could best an index as a proxy for overall good governance.

Evaluating the quality of a firm's governance from a single board characteristic rather than a multi-factor index might be justified on econometric grounds as well. The measurement error in computing a single variable such as a board's stock ownership, for instance, might well be lower than that of an index, which requires accurate identification of a multitude of board processes, executive compensation practices, and firm charter and bylaw provisions. Namely,

¹³⁶ For economic models in which outside directors have incentives to build reputations as expert monitors see Eugene Fama Agency Problems and the Theory of the Firm, 88 J. Pol. Econ. 288 (1980); Eugene Fama & Michael Jensen, Separation of Ownership and Control, 26 J. Law & Econ. 301 (1983). The legal literature has long believed that independent directors have the proper incentives to adequately monitor management, see, for example, Melvin A. Eisenberg, *The Structure of the Corporation* (1976), and that stock ownership by directors can also provide adequate incentives. See, e.g, Charles M. Elson, *The Duty of Care, Compensation and Stock Ownership*, 63 U. Cin. L. Rev. 649 (1995). For an economic model that suggests that equity compensation for outside directors will increase board monitoring see Benjamin E. Hermalin & Michael S. Weisbach, *Endogenously Chosen Boards of Directors and Their Monitoring of the CEO*, 88 Amer. Econ. Rev. 96, 111 (1998).

the more numerous the attributes of governance that must be tracked to identify the quality of a firm's governance, the greater the possibility of error in recording the value of any one component and hence, in measuring overall quality. And the greater the imprecision in the calculation of the proxy for firms' governance quality, the higher the probability that the statistical analysis of the relation between governance and performance will be misspecified.

There are certainly analytical problems presented by single governance variables. For example, the independence of the board is conventionally identified by the proportion of directors who are neither employed nor affiliated (i.e., have material relations) with a firm, but there are data indicating that not all such independent directors are equal with respect to monitoring effectiveness. Thus, using board independence alone as a proxy for governance may result in misspecification of statistical analyses.¹³⁷ However, the identification and measurement problems are even more problematic with respect to indices.

For instance, construction of an index requires that all of the variables in the index be weighted. The weights a particular index assigns to individual board characteristics and other

¹³⁷ See, e.g., Eliezer M. Fich & Anil Shivdasani, *Are Busy Boards Effective Monitors?*, 61 *J. Fin.* 689 (2006) (finding less monitoring by boards with a majority of independent directors who serve on multiple boards, since CEO turnover following poor performance with such boards is indistinguishable from that for insider-dominated boards, in contrast to prior research finding majority independent director boards were more likely to replace CEOs of poorly performing firms than insider boards), and the following studies, among others, that find that with respect to audit committee composition, it is not director independence, but independent directors with appropriate financial accounting expertise, that improves firm value, e.g., Mark L. DeFond, Rebecca N. Hann & Zuesong Hu, *Does the Market Value Financial Expertise on Audit Committees of Boards of Directors?* 43 *J. Accounting Res.* 153 (2005); Andrew J. Felo, Srinivasan Krishnamurthy & Steven A. Solieri, *Audit Committee Characteristics and the Perceived Quality of Financial Reporting: An Empirical Analysis* (2003); Roman L. Weil, Douglas J. Coates & M. Laurentius Marais, *Audit Committee Financial Literacy: A Work in Progress*, CRSP Working Paper no. 605 (2005). Similarly, computation questions can arise for another governance variable that is often investigated singly, equity ownership of management. Whether the relevant ownership for incentive purposes is the percentage of outstanding shares or the dollar value of the shares held by the manager depends on how the manager's actions that outsiders cannot monitor are expected to affect firm value. John E. Core, Wayne R. Guay & David F. Larcker, *Executive Equity Compensation and Incentives: A Survey*, 9 *F.R.B.N.Y. Econ. Policy Rev* 27, 31 (2003).

governance features are critical. If the weights are not consistent with the weights used by market participants in assessing the relation between governance and firm performance, then incorrect inferences would be drawn regarding the relation between governance and firm performance, even if the governance components in the index are correctly measured.

A further critical problem with a weighting system for an index of governance quality is that good governance features may well be substitutes. If good governance features are substitutes, then it is incorrect to treat them as complements, which treatment is the effect of assigning positive weights to all of the good governance attributes of an index (the approach of the academic indices). Such an index ranking will provide an inaccurate measure of the relative quality of firms' governance.¹³⁸ Although hardly any modeling of corporate governance has been undertaken, so that there is no satisfactory theory of when or whether different aspects of good governance should be understood to be substitutes or complements,¹³⁹ empirical research indicates that the concern is not hypothetical: in fact, at least several such mechanisms are, in

¹³⁸ In addition, if the multiple dimensions of governance the indices seek to capture cannot be combined into a single dimension, then regardless of measurement issues, an index will not fare better than a single governance device in predicting performance because the index is, of course a one dimensional construct. David Larcker, Scott Richardson, and Irem Tuna analyze the relation between governance and accounting performance by a principal components analysis that collapses 39 governance devices into 14 dimensions. David F. Larcker, Scott A. Richardson & Irem Tuna, *Corporate Governance, Accounting Outcomes, and Organizational Performance*, 82 *Acct. Rev.* 963 (2007). The large number of factors that remain in their analysis could suggest that it is not possible to construct a one-dimensional governance index that has predictive power. However, most of the 14 factors are not significantly related to the accounting measures they examine, a finding that might suggest that the desire for parsimony and ease of comparability across firms that underlies the effort to create governance indices that collapse multiple dimensions into one may not be entirely off the mark.

¹³⁹ For example, comprehensive reviews of key governance mechanisms—boards of directors and outside blockholders—emphasize that the theoretical modeling of these devices is extremely limited to nonexistent. See Benjamin E. Hermalin & Michael S. Weisbach, *Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature*, 9 *F.R.B.N.Y. Econ. Policy Rev.* 7 (2003); Clifford G. Holderness, *A Survey of Blockholders and Corporate Control*, 9 *F.R.B.N.Y. Econ. Policy Rev.* 51 (2003).

fact, substitutes¹⁴⁰ This finding severely complicates an assessment of good governance practices using a simply constructed index.

In particular, in an important contribution, Stuart Gillan and colleagues (GHS) find, in an exhaustive analysis, that measures of high quality governance are substitutes.¹⁴¹ More specifically, characteristics related to board independence, which GHS collectively term “internal governance,” are inversely correlated with the G-index, which, like Cremers and Nair, GHS characterize as a measure of “external governance.”¹⁴² In other words, firms with more independent boards have more defenses (higher G-index scores). Although GHS do not examine the relation between governance and performance, their research bears importantly on how to interpret GIM’s finding, for GHS’ research calls into question the use of governance indices composed of equally weighted sums of items considered good governance practices, such as the G and E indices and Gov-Score.¹⁴³

¹⁴⁰ See *infra* notes 98 and 100.

¹⁴¹ Stuart Gillan, Jay C. Hartzell & Laura T. Starks, *Tradeoffs in Corporate Governance: Evidence from Board Structure and Charter Provisions* (2007), available at http://www.law.yale.edu/documents/pdf/cbl/starks_paper.pdf.

¹⁴² *Id.* The G and E indices do not include internal governance measures, so their methods of adding up index components are not directly challenged by GHS’ finding. However, Brown and Caylor’s Gov-Score, as do commercial indices, includes both internal and external governance measures, thus, as is the approach of governance advocates, considering the index components defined as good governance practices to be complements rather than substitutes.

¹⁴³ Examples of other papers also finding that different attributes of good governance are substitutes include, Mehran, *supra* note 34 (finding blockholding substitutes for use of executive incentive compensation); Mayers, Anil Shivdasani & Clifford W. Smith, Jr., *Board Composition and Corporate Control, Evidence from the Insurance Industry*, 70 *J. Bus.* 33 (1997) (mutuals employ more outside directors than stock insurance companies, consistent with independent boards being substitutes for market for control); Morris G. Danielson & Jonathan M. Karpoff, *On the Uses of Corporate Governance Provisions*, 4 *J. Corp. Fin.* 347 (1998) (finding firms with poison pills have low inside ownership, high institutional ownership and high proportion of outside directors). We discuss exclusively Gillan, Hartzell & Starks (GHS) in the text not only because their study is the most recent but also because it is the most comprehensive, has the largest data set, and is the most closely related to our concerns. GHS examine the interaction of the G index with governance variables not included in it, while undertaking extensive statistical analyses, including a simultaneous equations estimation that addresses the methodological concerns with the index literature that we discuss in Part II.B related to the endogeneity of governance

The GHS study was extensive, collecting corporate governance features of over 2,000 firms from 1997-2000 in order to investigate the relation between board attributes and charter provisions relating to takeover defenses, which comprise the G and E indices.¹⁴⁴ Their aim was to ascertain whether a strong independent board is a substitute or complement for the external governance of the market for corporate control.¹⁴⁵ If firms with independent boards adopt few defenses (have low G values), then internal and external governance mechanisms are functioning as complements, whereas if firms with such boards adopt many defenses (have high G values), then the mechanisms are substitutes.

GHS employed two statistical techniques to identify the clustering of different attributes of boards that relate to their independence, such as composition, size, committee characteristics, and separation of the positions of CEO and board chairman, in relation to defenses, along with univariate comparisons of board features with defenses.¹⁴⁶ No matter which methodology applied, they find that the strength of the independence of the board is positively correlated with the number of defenses (high G index values), that is, internal and external governance mechanisms are substitutes.¹⁴⁷ Hence, in what would appear to be perverse to many corporate governance activists, a conventional metric of good corporate governance—independent

choices. Larcker, Richardson, and Tuma, *supra* note 72, find that underlying governance components do not always load with the same sign on 14 governance factors that they identify from 39 governance devices, a finding providing additional support for the contention that governance mechanisms are sometimes substitutes rather than complements.

¹⁴⁴ See Gillian et al., *supra* note 141 at .

¹⁴⁵ *Id.* at .

¹⁴⁶ The two techniques identify commonalities across firms' governance characteristics: a cluster analysis that groups firms by their board and charter choices (so that within each four groups of sample firms the homogeneity of governance is maximized while across the groups heterogeneity is maximized) and a principal components analysis that groups board governance attributes into summary structure measures, whose relation to the G index across firms is then explored. **[Are the cluster analysis and the principal components analysis the “two techniques” referred to before the colon? If so, I think putting “one” and “two” in the clause after the colon would be helpful to understand the sentence.]** *Id.*, at 13, 19-20.

¹⁴⁷ *Id.* at .

boards—is associated with a conventional measure of poor corporate governance—entrenched management, as indicated by the extent of the firm’s takeover defenses—as well as the specifics of firms’ operating environment. Such associations strongly suggest that evaluating firms according to how they do with respect to the reigning governance indices, that do not take into account the complexity of the relation of the components along with governance elements that the index may be missing, is problematic and likely to produce an inaccurate understanding of the operation of corporate governance mechanisms.

In addition to finding that high quality governance on one dimension may offset a need for what are conventionally thought to be best practices on another governance dimension, GHS find that governance varies with specific characteristics of firms. Namely, the correlated sets of governance features between board independence and takeover defenses are also correlated with other characteristics of firms (such as firm age, institutional ownership, R&D expenditures, tangible assets, capital expenditures).¹⁴⁸ The combination of these two findings underscores the fact that firms choose their governance characteristics. If particular governance mechanisms or combinations thereof are best suited for specific operating environments, then we should expect to find systematic variation in governance choices across firms. Moreover, if firms optimize over governance choices, then in the cross-section comparison of firms with different governance combinations, we should not find systematic performance differences, i.e., firms with higher good governance index scores should not outperform those with lower rankings.

Firms’ ability to select their governance regimes presents a thorny technical issue, referred to as one of endogeneity, for traditional statistical analyses, and virtually all studies of governance, including those by GIM, BCF, and Caylor and Brown have that limitation. It could

¹⁴⁸ Id. at 24.

explain, for instance, why research focused on single governance mechanisms does not identify a relation between governance and performance.¹⁴⁹ It may also explain why GIM's findings were not robust. Accordingly, the following section elaborates more fully the endogeneity problem and introduces the econometric technique used to address it. We then report the results of a study of two of us applying such a statistical technique that takes endogeneity into account, in order to evaluate the relation between governance indices and performance. Given the theoretical and empirical issues arising in the use of indices compared to a single governance mechanism that we have discussed, we think it is an open question whether an index will be of greater value to investors for evaluating governance quality, and more importantly, performance, than a single governance dimension capturing the quality of the board. Accordingly, in our analysis of the relation between governance and performance that follows, we compare the performance of indices to that of several board characteristics that might serve as a single dimension proxy for overall governance quality.

C. Econometric Issues: Performance and Governance are Endogenous

A core and knotty econometric problem in the literature examining the relation between governance quality and performance is that the two are not independent. Some governance features may be motivated by incentive-based economic models of managerial behavior, which also affect performance. Broadly speaking, these models fall into two categories, agency (also referred to as moral hazard) and adverse selection models. In agency models, a divergence in the interests of managers and shareholders causes managers to take actions that are costly to shareholders. Such actions are most often characterized as the consumption of perquisites on the job (such as lavish office equipment), but also refer to other means by which managers may

¹⁴⁹ As GHS note, most studies of corporate governance investigate a single governance mechanism and do not examine the interaction of different devices. Id. at 4

exercise discretion to benefit themselves at the shareholders' expense, such as shirking (lack of effort) or selecting inferior projects from among those available (i.e., projects with too little risk). Contracts cannot preclude this activity if shareholders are unable to observe managerial behavior directly, but devices such as ownership by the manager may be used to induce managers to act in a manner that is consistent with the interest of shareholders.¹⁵⁰

Adverse selection models are founded on the hypothesis that managers possess differing levels of ability, differences that cannot be observed by shareholders. In this setting, ownership may be used to induce revelation of the manager's private information about cash flow or her ability to generate cash flow, which information the shareholders cannot otherwise learn. Performance provides information to the principal about the ability of the manager, and is therefore reflected in managerial payoffs, which may include dismissal for poor performance.¹⁵¹

In both settings, a manager has information that shareholders do not possess, although shareholders are aware of their informational disadvantage. The contracting problem, accordingly, is to write a contract that mitigates the information asymmetry. In either of the two scenarios, some features of corporate governance may be interpreted as characteristics of the asymmetry-mitigating contract governing shareholder-manager relations. Governance is affected by the same unobservable features of managerial behavior or ability that are linked to ownership and performance; it is in this sense that governance and performance are endogenous. If governance and performance are endogenously related, analyzing the relation between them requires different statistical techniques than if the two variables are exogenously related (that is, than if the relation is one-way, with governance affecting performance, rather than bi-

¹⁵⁰ For a classic discussion of the agency problem see Sanford Grossman & Oliver D. Hart, *An Analysis of the Principal-Agent Problem*, 51 *Econometrica* 7 (1983).

¹⁵¹ For a classic treatment of the adverse selection problem see Roger Myerson, *Incentive Compatibility and the Bargaining Problem*, 47 *Econometrica* 61 (1987).

directional), which exogenous relationship is uniformly assumed by the literature on governance indices we have reviewed.

In order to lay out the alternative methodology, we need to better specify the potential two-way relationships between different governance attributes, firm characteristics, and performance. At least since Adolph Berle and Gardiner Means' classic 1932 work identifying the potential agency problem in U.S. public corporations, economists have emphasized the costs of diffused share ownership; that is, the impact of ownership structure on performance.¹⁵² But as Harold Demsetz argues, because we observe many successful public companies with diffused share ownership, clearly there must be offsetting benefits, such as better risk-bearing, rendering it difficult to assert that concentrated ownership should be positively associated with performance.¹⁵³ Moreover, performance could determine ownership for reasons related to performance-based compensation and insider information. For example, superior firm performance leads to an increase in the value of stock options owned by management which, if exercised, would increase their share ownership. Further, if there are serious divergences between insider and market expectations of future firm performance, then insiders have an incentive to adjust their ownership in relation to the expected future performance. Finally, Charles Himmelberg, Glenn Hubbard, and Darius Palia contend that ownership structure may be endogenously determined by the firm's contracting environment, which differs across firms in

¹⁵² Adolph A. Berle & Gardiner Means, *The Modern Corporation and Private Property* (1932).

¹⁵³ Harold Demsetz, *The Structure of Ownership and the Theory of the Firm*, 26 *J. Law & Econ.* 375 (1983). Investors' preference for liquidity would lead to smaller blockholdings given that larger blocks are less liquid in the secondary market. In addition, the public policy bias in the U.S. towards protecting minority shareholder rights increases the costs of holding large blocks. See Bernard Black, *Shareholder Passivity Reexamined*, 89 *Mich. Law Rev.* 2550 (1990); Mark J. Roe, *Strong Managers, Weak Owners: The Political Roots of American Corporate Finance* (1994).

observable and unobservable ways.¹⁵⁴ For example, if the scope for perquisite consumption is low in a firm, then a low level of management ownership may be the optimal incentive contract.

In addition to ownership, leverage (debt in the capital structure) is a firm characteristic, related to governance in the form of monitoring by creditors,¹⁵⁵ that may be endogenously determined with performance. In a seminal paper, Sanford Grossman and Oliver Hart considered the ex ante efficiency perspective to derive predictions about a firm's financing decisions in an agency setting.¹⁵⁶ An initial entrepreneur seeks to maximize firm value with some disciplinary mechanism forcing the entrepreneur to choose the value-maximizing level of debt. Extending that idea, Walter Novaes and Luigi Zingales show that the optimal choice of debt from the viewpoint of shareholders differs from the optimal choice of debt from the managers' perspective.¹⁵⁷

The conflict of interest between managers and shareholders over financing policy arises for three reasons. First, shareholders are much better diversified than managers who, besides having stock and stock options on the firm, have their human capital tied to the firm.¹⁵⁸ Second, as suggested by Michael Jensen, a larger level of debt pre-commits the manager to working

¹⁵⁴ Charles P. Himmelberg, R. Glenn Hubbard & Darius Palia, *Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance*, 53 *J. Fin. Econ.* 353 (1999). The endogeneity of management ownership has also been noted by many others. E.g., Michael Jensen & Jerold B. Warner, *The Distribution of Power among Corporate Managers, Shareholders and Directors*, 20 *J. Fin. Econ.* 3 (1988).

¹⁵⁵ Michael Jensen provides another explanation of how debt reduces agency problems: Because it must be repaid to avoid the threat of bankruptcy and loss of control of the firm, debt reduces free cash flow—cash in excess of the projects available to the firm that generate positive net present value transactions—that managers would otherwise waste on negative net present value projects rather than return to shareholders, as they would prefer. Michael C. Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 *Amer. Econ. Rev.* 323 (1986).

¹⁵⁶ Grossman & Hart, *supra* note 84.

¹⁵⁷ Walter Novaes & Luigi Zingales, *Capital Structure Choice under a Takeover Threat*, University of Chicago working paper (1999).

¹⁵⁸ Eugene F. Fama, *Agency Problems and the Theory of the Firm*, 88 *J. Pol. Econ.* 288 (1980).

harder to generate and pay off the firm's cash flows to outside investors.¹⁵⁹ Third, Milton Harris and Artur Raviv and Rene Stulz hypothesize that managers may increase leverage beyond what might be implied by some "optimal capital structure" in order to increase the voting power of their equity stakes and thereby reduce the likelihood of a takeover and the resulting possible loss of employment.¹⁶⁰

While the above research focuses on capital structure and managerial entrenchment, a different strand of the literature has focused on the relation between ownership and capital structure. Grossman and Hart and Oliver Hart and John Moore consider an incomplete contracting environment—one in which it is difficult to specify all possible future states of nature and relevant decisions in a contract that can be enforced in a court.¹⁶¹ In such an incomplete contracting environment, the allocation to management of control rights through stock ownership, rather than provision of contractual payments under compensation agreements, can be used to provide incentives to the managers to make necessary investments (such as investing in firm-specific human capital) that maximize the value of the firm.

This brief overview of the inter-relationships among corporate governance, including capital and ownership structure, and corporate performance, suggests that, from an econometric viewpoint, to study the relationship between corporate governance and performance, one would need to formulate a system of simultaneous equations that specifies the relationships among the above mentioned variables. In recent work, two of us have specified and estimated the following

¹⁵⁹ Jensen, *supra* note 89.

¹⁶⁰ Milton Harris & Artur Raviv, *Corporate Control Contests and Capital Structure*, 20 *J. Fin. Econ.* 55 (1988); Rene M Stulz, *Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control*, 20 *J. Fin. Econ.* 25 (1988).

¹⁶¹ Sanford Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 *J. Pol. Econ.* 691 (1986); Oliver D. Hart & John Moore, *Property Rights and the Theory of the Firm*, 98 *J. Pol. Econ.* 1119 (1990).

system of four simultaneous equations, which captures the interrelationships among the aforementioned variables:¹⁶²

$$\text{Performance} = f_1(\text{Ownership, Governance, Capital Structure, } Z_1, \varepsilon_1), \quad (1a)$$

$$\text{Governance} = f_2(\text{Performance, Ownership, Capital Structure, } Z_2, \varepsilon_2), \quad (1b)$$

$$\text{Ownership} = f_3(\text{Governance, Performance, Capital Structure, } Z_3, \varepsilon_3), \quad (1c)$$

$$\text{Capital Structure} = f_4(\text{Governance, Performance, Ownership, } Z_4, \varepsilon_4), \quad (1d)$$

where the Z_i are vectors of control variables and instruments influencing the dependent variables and the ε_i are the error terms associated with exogenous noise and the unobservable features of managerial behavior or ability that explain cross-sectional variation in performance, ownership, capital structure and governance.¹⁶³

Most of the extant literature that we have discussed, such as GIM's and BCF's studies, has analyzed the relation between governance and performance considering only the first equation in the above system. This limited examination is equivalent to estimating the above system using ordinary least squares (OLS), instead of two-stage least squares (2SLS) or three-stage least squares (3SLS), which are econometrically more appropriate for estimating a system of simultaneous equations.¹⁶⁴ What happens if one estimates a system of simultaneous equations

¹⁶² Bhagat & Bolton, *supra* note 34.

¹⁶³ *Id.*

¹⁶⁴ OLS is a regression method that estimates a linear combination of the explanatory or independent variables so as to minimize the sum of squared residuals or errors (which are the difference between the actual and estimated values of the dependent variable). Peter Kennedy, *A Guide to Econometrics* 13 (5th ed 2003). This estimator, which is the most widely-used econometric technique, has desirable statistical properties, *id.* at 13-14, if certain assumptions hold, the most important for this paper's analysis being that the explanatory variables are exogenous, that is, that they are distributed independently of the error term and hence stand in a fixed relation to the dependent variable. That assumption is violated when an independent variable is determined simultaneously with the dependent variable, as is the case, we maintain, regarding governance and performance. Both the 2SLS and 3SLS estimation techniques address the violation of the exogeneity assumption and therefore retain desirable statistical properties as estimators, by solving simultaneously for all of the endogenous variables such that in the final estimated,

using OLS? Let us assume, for the sake of exposition, that there is no relationship between (a certain measure of) governance and (a certain measure of) performance. Under such an assumption, it is possible for the OLS estimates of the relationship between governance and performance to be statistically insignificant, significantly positive, *or* significantly negative. On the other hand, if the truth is that there is, say, a positive relationship between governance and performance, it is also possible for the OLS estimates of the relationship between governance and performance to be statistically insignificant, significantly positive, *or* significantly negative.¹⁶⁵ In other words, OLS estimates of the above system of equations cannot allow us to make any econometrically defensible inferences about the relationship between governance and performance.¹⁶⁶

In the next section we illustrate that this general econometric wisdom is correct in the context of estimating the relation between governance and performance: Findings regarding the

reduced-form equation, no endogenous variables appear as independent variables. Id. at 181, 188-91.

¹⁶⁵ This is a fundamental econometrics point; for example, Kennedy notes, “In a system of simultaneous equations, all the endogenous variables are random variables—a change in any disturbance term changes all the endogenous variables since they are determined simultaneously... As a consequence, the OLS estimator is biased, even asymptotically.” Id. at 180. In addition, Maddala observes, “...the simultaneity problem results in inconsistent estimators of the parameters, when the structural equations are estimated by ordinary least squares (OLS).” G.S. Maddala, *Introduction to Econometrics* 383 (2d ed. 1992).

¹⁶⁶ The economics literature has numerous examples of the inappropriateness of using OLS when the underlying set of relationships suggest a need to estimate a system of simultaneous equations. A good example is a study by Allyn Strickland & Leonard Weiss, *Advertising, Concentration, and Price-Cost Margins*, 84 *J. Pol. Econ.* 1109 (1976). This research attempted to address the concern of regulators and policy-makers that companies in more concentrated industries enjoyed higher profit margins. Following previous researchers they first estimated the impact of industry concentration (C) on price/cost margin in that industry (M) using the following equation (where A denotes advertising expenditures):

$$M = h_1(C, A, \text{control variables})$$

When this equation was estimated using OLS, the coefficient on C was significant and positive, giving credence to the notion that companies in more concentrated industries enjoyed higher profit margins. However, the authors correctly pointed out that the above equation was but one equation in a system of simultaneous equations. The other two equations in the system are:

$$A = h_2(C, M, \text{control variables})$$

$$C = h_3(A, \text{control variables}) \text{ [Should this equation include M?]}$$

When the above three equations were estimated as a system of equations, there was no significant relation between concentration and profit margin.

relationship between various governance measures and performance identified in the literature using OLS are not always robust when those relationships are estimated in a system of simultaneous equations. However, it should be noted that estimating a simultaneous equation system in order to handle endogeneity is not without its own technical issues. To estimate a system of simultaneous equations, the researcher must identify exogenous instrumental variables that explain one of the endogenous variables but not the other(s), and with multiple endogenous variables, as in the system of equations represented by 1a-1d, such an instrumental variable is needed for each of the endogenous variables in an equation.¹⁶⁷ Identification of such instruments can be exceedingly difficult because, when two variables' values are integrally connected, it is likely that most explanatory variables affecting one will also directly affect the other. Thus researchers might opt for OLS rather than the more appropriate simultaneous equation technique on the rationale that the latter system cannot be estimated properly either.

1. Comparing the Relative Performance of Governance Indices and Single Attributes of Governance in Predicting Future Performance

Bhagat and Bolton undertook a comprehensive comparative analysis of the relationship between governance indices, single attributes of governance, and performance using the simultaneous equation setup described in equations 1a-1d. Table 1 summarizes their results regarding the relationship between governance and performance.¹⁶⁸ While previous studies have used both stock-market- and accounting-based measures of performance, Bhagat and Bolton rely

¹⁶⁷ E.g., Kennedy, *supra* note 98, at 188. Technically, an instrument is an explanatory variable that is uncorrelated with the residual or error term of the regression, but correlated with the endogenous variable for which it is an instrument. *Id.* at 159.

¹⁶⁸ Bhagat & Bolton, *supra* note 34. The instruments used to estimate the system of equations (1a-d) are: in equation (1a), the ratio of treasury stock to assets; (1b), the percentage directors who are active CEOs and the percentage of firm stock owned by directors; (1c), the ratio of CEO tenure to CEO age, which is interpreted as a measure of CEO quality; and (1d), the modified Altman's Z-score, which is considered to be a proxy for financial distress. *Id.* at 11-12. The choice of instruments and the appropriateness of using instrumental variables rather than OLS is discussed in Appendix B.

only on accounting performance measures, and they consider a sample of the largest 1500 U.S. corporations over the period 1998-2002. They emphasize accounting measures rather than stock returns as the appropriate performance measure for this analysis because, if investors anticipate the effect of corporate governance on performance, then long-term stock returns will not be significantly correlated with governance even if a significant correlation between performance and governance indeed exists.¹⁶⁹ Accounting measures, by contrast, do not suffer from such an anticipation problem.

Table 1 here

Table 1 also does not include Tobin's Q as a performance measure although prior studies, notably those by GIM and BCF, have treated it as a key performance measure.¹⁷⁰ This omission is justified because Tobin's Q has two serious shortcomings, even though it does not suffer from the anticipation problem of stock returns. First, if a firm has a high fraction of its assets as intangibles rather than tangible assets and if monitoring intangible assets is difficult for shareholders, then shareholders are likely to require a higher level of managerial ownership to align incentives in such a firm. Because the firm has a high fraction of its assets as intangibles it will have a high Tobin's Q as the numerator (market price) will impound the present value of the cash flows generated by the intangible assets, but the denominator usually does not include the investments a firm may have made in intangible assets. (This is because, under current accounting conventions, the denominator will not include the replacement value of these intangible assets.) As a consequence, these intangible assets will generate a positive correlation

¹⁶⁹ For a detailed discussion of the advantages and disadvantages of using stock market and accounting based measures of performance see Sanjai Bhagat & Richard H. Jefferis, *The Econometrics of Corporate Governance Studies* (2002).

¹⁷⁰ Bhagat and Bolton, *supra* note 39, also consider the relationship between Tobin's Q and the seven governance measures examined in the tables. They do not find any significant or consistent relationship between any governance measure (including the G and E indices) and future Tobin's Q.

between ownership and performance, though this relation is spurious—due to the calculation of Tobin’s Q—not causal.

Second, a higher Tobin’s Q might be reflective of a firm’s greater market power (which is an intangible asset that affects the numerator and not the denominator of the ratio).

Shareholders, cognizant of the fact that this market power shields the management from the discipline of the product market, will, in all probability, require managers of such a company to own more stock. That is because greater managerial ownership will be expected to tend to align managers’ incentives better and offset the effect of the reduced discipline of the product market. In that scenario we would again observe a spurious relation between performance as measured by Tobin’s Q and managerial ownership. Because ownership is inextricably related to governance, as represented by the system of equations 1a-1d, the problematic use of Tobin’s Q to analyze the relation between performance and ownership cannot be avoided by analyzing the relation between performance and governance features that exclude ownership (e.g., analyses of GIM and BCF).

The results in Table 1 suggest a significant negative correlation between the G index and next year’s return on assets (ROA).¹⁷¹ Given that lower G index numbers reflect fewer defenses and thus more exposure to the external governance mechanism of the market for control, these findings are consistent with a positive relation between good governance, as measured by GIM, and operating performance. Results using the contemporaneous operating performance are similar. However, this relation is insignificant, albeit the sign is still negative, when we consider the operating performance of the next two years. These findings are consistent with GIM’s

¹⁷¹ The accounting measure of performance in Table 1 is return on assets because a comprehensive study comparing accounting performance measures by Brad Barber and John Lyon provides evidence favoring its use. Brad M. Barber & John D. Lyon, “Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics,” 41 J. Fin. Econ. 359 (1996).

finding of a positive relation between good governance and performance for the period 1990-99, and extends their findings to 2000-04.

However, it is important to note that GIM's finding of a positive relation between good governance and performance is based on long-term stock returns as the measure of performance, and their analysis does not take into account the endogeneity of the relationships among corporate governance, performance, capital structure, and corporate ownership structure.¹⁷² As previously noted, if investors anticipate the effect of corporate governance on performance, long-term stock returns will not be significantly correlated with governance even if a significant correlation between performance and governance exists. Indeed, as documented by Bhagat and Bolton and summarized in Table 2, there is no significant or consistent relation between GIM's measure of governance or any other measure of governance and contemporaneous, next year's, or the next two years' stock returns.¹⁷³

Table 2 here

Table 1 indicates that there is a significant negative correlation between the E index and next year's ROA. Similar to the G index, lower E index numbers reflect better governance; hence, these results are consistent with a positive relation between good governance, as measured by BCF, and operating performance. Results using the contemporaneous and next two years' operating performance are similar. But, again, paralleling GIM's analysis, BCF's finding

¹⁷² Consistent with the findings reported here, Core et al., *supra* note 74, also find a positive relation between the G index and next year's ROA, although they also do not take into account the endogeneity of the relationships among corporate governance, performance, capital structure, and corporate ownership structure.

¹⁷³ These findings are consistent with those of John Core, Robert Holthausen, and David Larcker, who conclude that their governance measures related to board structure (size, director composition, age and tenure, and identity of chairman) and ownership structure (blockholdings) "more consistently predict future accounting operating performance than future stock market performance." John E. Core, Robert W. Holthausen & David F. Larcker, *Corporate Governance, Chief Executive Officer Compensation, and Firm Performance*, 51 *J. Fin. Econ.* 371 (1999).

of a positive relation between good governance and performance is based on long-term stock returns, and Table 2 indicates that there is no significant relation between BCF's measure of governance and contemporaneous, next year's or the next two years' stock returns.

Single governance variables related to the board of directors also exhibit significant relationships with accounting performance. There is a significant and positive relation between the dollar value of the median director's stock ownership and contemporaneous, next year's, and next two years' operating performance. Table 3 and Figure 1 provide additional characterizations of the univariate relationship between board ownership and future operating performance.

Table 3 and Figure 1 here

Similarly, the separation of the positions of CEO and board Chairman (referred to in the literature as CEO-Chair duality) is negatively and significantly related to contemporaneous, next year's, and next two years' operating performance.¹⁷⁴ This finding, along with the results for the G and E indices, suggests that greater managerial control may lead to worse future operating performance. It is also in sharp contrast to the previous literature that has generally found no significant relation between CEO-Chair duality and future performance.¹⁷⁵ Board independence, however, is negatively and significantly related to contemporaneous, next year's, and next two

¹⁷⁴ Having an independent (i.e., non-CEO) chairman is frequently included as one of the components indicating the strength of a board's independence. The governance variable CEO-Chair duality equals 1 if the CEO is Chair and 0 otherwise. Hence, a negative relation between CEO-Chair duality and performance is equivalent to a positive relation between separation of the positions of CEO and Chair and performance.

¹⁷⁵ E.g., Ram Baliga, Charles Moyer & Ramesh Rao, CEO Duality and Firm Performance: What's The Fuss? 17 *Strategic Mgmt J.* 41 (1996); James A. Brickley, Coles & Greg Jarrell, Leadership Structure: Separating the CEO and Chairman of the Board, 3 *J. Corp. Fin.* 189 (1997); Maria Carapeto, Meziane Lasfer & Katerina Machera, Does Duality Destroy Value? Cass Business School working paper (2005). One possible explanation for the disparity may be that these earlier studies did not control for the endogeneity of performance and governance. In addition the sample sizes in those studies are much smaller than that in Bhagat and Bolton.

years' operating performance. This result is surprising, especially considering the recent emphasis that has been placed on board independence by the stock exchanges' amended listing requirements post-Enron; however, it is consistent with prior literature on boards.¹⁷⁶

Table 1 also contains some evidence probative on commercial indices. The TCL compliance rating is unrelated to next year's and next two years' operating performance, and its relation with contemporaneous operating performance is negative but only marginally significant.¹⁷⁷ Furthermore, Brown and Caylor's Gov-Score (which uses ISS's assessment of acceptable governance practices) is unrelated to contemporaneous and next year's operating performance. These findings highlight the problems of constructing a governance index using multiple indicators of board structure and processes, charter provisions, and management compensation structure. As noted earlier, while these features do characterize a company's governance, construction of a governance index requires the daunting task of properly weighting the variable components.¹⁷⁸ The failure to find a relation between these multiple-dimension indices and performance may well be a function of inapposite weights on the components, rather than the true absence of a relation between performance and governance.

Finally, Bhagat and Bolton find that the G-index and median director ownership are uncorrelated. This conclusion suggests that a composite measure of governance that combines the information contained in the G-index and median director ownership might be a more

¹⁷⁶ The NYSE and NASDAQ required independent nominating and compensation committees, and majority board independence, after the enactment of SOX, see note 6, *supra*. Hermalin & Weisbach, *supra* note 65, review the literature suggesting a negative, and not positive, relation between performance and the proportion of a board that is independent. For reviews of the literature on the relation more generally between performance and board independence, see *supra* note 24.

¹⁷⁷ Bhagat and Bolton analyze TCL's benchmark compliance rating and not its effectiveness rating in their study. The compliance rating is more comparable to the other indices they study, but TCL does not consider it to be an appropriate measure of governance quality, see *supra* note 63 and accompanying text.

¹⁷⁸ See *supra* Part .

powerful predictor of operating performance than either measure by itself. For each year, all firms are ranked from best to worst governed with respect to each of the two governance variables, and the sum of these two ranks provides a composite governance score (Composite G-Ownership index) for each year for each sample firm. Consistent with their hypothesis, the combined measure of governance outperforms either of the two measures taken separately. They find that a 1 percent improvement in governance as measured by the composite index leads to a 1.874 percent change in operating performance in the current period, a 1.567 percent change in next year's operating performance, and a 1.520 percent change in the next two years' operating performance. (The respective changes per 1 percent governance improvement for the G index alone are 0.854 percent, 0.763 percent and 0.287 percent.)

The analysis in Bhagat and Bolton summarized in tables 1-3 does not compare the performance of the most prominent commercial indices, as their providers do not publicly disclose the details of their construction. It includes instead TCL's effectiveness index (which of its two rankings TCL deemphasizes), a close cousin to Glass-Lewis's index, which is a minor tweaking of the E-index, and Gov-Score, which straightforwardly tallies 51 governance components, out of the over 60 factors that are employed by ISS in a more complicated, proprietary weighting system.¹⁷⁹

But there is no reason to expect that commercial indices that are not analyzed would perform any better than the indices with a family resemblance that were investigated. To any reasonable observer, the burden of proof concerning whether ISS' index would perform better than its simplified version, the Gov-Score, ought to be placed on ISS, which is in possession of the relevant data. In support of this contention, ISS describes a process in which they constantly

¹⁷⁹ See supra notes 69, 52, and 54.

update their weighting algorithm,¹⁸⁰ suggesting that the index might well not predict performance because they feel a continual need to tinker with it. Furthermore, our reported results suggest that the more components in an index, the less likely it is to be positively associated with performance (in tables 1-3, Gov-score, the index with the highest number of components, fared worse than those with fewer, including the single board characteristics), a finding consistent with the fact that governance components may interact as substitutes and not complements.¹⁸¹ With regard to the other commercial indices that were not analyzed, it is implausible that they would do better than those investigated: TCL's preferred ranking system, along with GovernanceMetric's index, have very few gradations across firms and would therefore intuitively appear to be even less capable of predicting small differences in performance than the analyzed indices, which have greater variation.

Finally, recent work by Robert Daines and colleagues, who investigate whether three commercial indices (ISS, TCL, and GovernanceMetrics) can predict future performance,¹⁸² provides additional support for our extrapolation of the limitations of academic indices to commercial products. They find no systematic relation exists between the indices and performance.¹⁸³ Although they do not employ a simultaneous equation methodology, which is the approach we would prefer for seeking to identify the relation between governance and

¹⁸⁰ See supra note 66.

¹⁸¹ The same problem would explain the other index that fared equally as poorly as Gov-Score, TCL's effectiveness rating—which has fewer components than do Gov-Score or the G-index. In contrast to the G-index, the components of TCL's effectiveness rating include several different governance dimensions. See Appendix A for a description.

¹⁸² Robert Daines, Ian Gow & David Larcker, Rating the Ratings: How Good Are Commercial Governance Ratings?, Stanford University Working Paper (June 26, 2008) available at <http://ssrn.com/abstract=1152093>.

¹⁸³ Id. at 21-26, 29 and tbl.8 (unnumbered). They use several performance measures, including ROA, excess stock returns, and Tobin's Q. Only a fourth rating by Audit Integrity, a rating that focused on accounting practices and financial statement risk and that was included for comparison to the three better known and broader governance metrics, had some positive predictive ability: It was significantly positive in some model specifications of the ROA and stock performance measures. Id.

performance, their results suggest that the commercial indices perform even more poorly than the academic indices.

In summary, the findings in tables 1-3 suggest that certain complex measures of corporate governance—the G and E indices—and certain simple measures—director ownership and CEO-chair separation—are positively associated with current and future operating performance. This further suggests that there is not an obvious benefit to using those more complex measures. Indeed, governance indices that are comprised of more dimensions than the G and E indices and are therefore closer in form to indices marketed by commercial vendors such as TCL and ISS, are not even related to future performance. The combination of only one of those dimensions, outside director ownership, with the G index appears to have a greater impact on future operating performance than any of the governance indices alone.

2. Comparing the Relative Performance of Governance Indices and Single Attributes of Governance in Predicting Management Turnover after Poor Performance

Although the analysis up to now has focused on the relation between governance and overall performance, it is possible that governance matters most, or only, for a firm experiencing a crisis, or needing to make a critical decision, such as the decision to change senior management. In this regard, governance may be more important for imposing discipline and providing fresh leadership when the corporation is performing poorly than in the ordinary course of events.¹⁸⁴

To investigate this possibility, Bhagat and Bolton examined the impact on management turnover following poor performance of the academic governance indices and single board governance attributes. They estimate a multinomial logit regression in which the dependent

¹⁸⁴ See, e.g., Hermalin & Weisbach, *supra* note 65, at 17.

variable is equal to 0 if no turnover occurred in a firm-year, 1 if the turnover was disciplinary (i.e., the manager appears to have been dismissed because of poor performance), and 2 if the turnover was for some other, non-performance-based reason, i.e., non-disciplinary.¹⁸⁵ Using the past two years' stock return as the performance measure, they estimate the following baseline equation:

$$\text{Type of CEO Turnover} = g_l(\text{Past 2 years' stock return}, Z_1, \varepsilon_1) \quad (2a)$$

The Z_1 vector of controls includes CEO ownership, CEO age, CEO tenure, firm size, industry return, and year dummy variables.¹⁸⁶ The baseline results indicate that a firm's stock market returns during the previous two years, CEO stock ownership, and CEO tenure are significantly negatively related to disciplinary CEO turnover; these findings are consistent with the prior literature. Bhagat and Bolton further find that the prior two years' returns of firms in the industry is significantly positively related to disciplinary CEO turnover. In other words, if the prior industry performance has been good, the probability of disciplinary CEO turnover increases, regardless of the particular company's performance. Similarly, if the prior industry

¹⁸⁵ Bhagat and Bolton's criteria for classifying a CEO turnover as disciplinary or non-disciplinary is similar to that of Stuart C. Gilson, *Management Turnover and Financial Distress*, 25 *J. Fin. Econ.* 241 (1989); Mark R. Huson, Robert Parrino & Laura T. Starks, *Internal Monitoring Mechanisms and CEO Turnover: A Long-Term Perspective*, 56 *J. Fin.* 2265 (2001); and Kathleen A. Farrell & David A. Whidbee, *Impact of Firm Performance Expectations on CEO Turnover and Replacement Decisions*, 36 *J. Accounting & Econ.* 165 (2003). CEO turnover is classified as "non-disciplinary" if the CEO died, if the CEO was older than 63, if the change was the result of an announced transition plan, or if the CEO stayed on as chairman of the board for more than a year. CEO turnover is classified as "disciplinary" if the CEO resigned to pursue other interests, if the CEO was terminated, or if no specific reason was given. Additionally, to address endogeneity concerns involving management turnover and performance (and ownership) they estimate a system of five equations: 1a, 1b, 1c, 1d, and 2b. Results from taking turnover endogeneity into account are entirely consistent with the results noted below.

¹⁸⁶ These control variables are motivated by a substantial literature on performance and CEO turnover. See, e.g., Huson, Parrino & Starks, *supra* note 113 (CEO age and year dummies); Ellen Engel, Rachel M. Hayes & Xue Wang, *CEO Turnover and Properties of Accounting Information*, 36 *J. Accounting & Econ.* 197 (2003) (CEO age, industry adjusted returns); Farrell & Whidbee, *supra* note 111 (CEO age, CEO tenure, firm size, industry adjusted performance); Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 *J. Fin. Econ.* 432 (1988) (CEO share ownership).

performance has been poor the probability of disciplinary CEO turnover decreases, regardless of the particular company's performance.

To determine the role that governance plays in CEO turnover, Bhagat and Bolton create an interactive variable that is the product of the past two years' stock return and the governance variable. The reasoning behind this construct is that if the firm is performing adequately, good governance should not lead to CEO turnover; only when performance is poor would we expect to find better governed firms to be more likely to replace the CEO. To measure this effect, they estimate the following modified version of equation 2a:

$$\text{Type of CEO Turnover} = g_2(\text{Past 2 years' stock return, Governance,} \\ \text{(Past 2 years' stock return } \times \text{ Governance)}, Z_1, \epsilon_2) \quad (2b)$$

As summarized in Tables 4 and 5, Bhagat and Bolton find that when the governance variables are included, the prior return variable is not significant in five of the seven cases, suggesting that poor performance alone is not enough to lead to a change in senior management. In addition, the governance variable by itself is statistically not significant in most cases.¹⁸⁷ This finding suggests that good governance *per se* is not related to disciplinary turnover (or that the literature's definition of good governance is misplaced, at least with respect to disciplinary turnover).

Tables 4 and 5 here

However, the key variable for determining whether governance is related to disciplinary turnover for poorly performing firms is the interactive term. When governance is measured by either the percentage of independent directors or the dollar value of the median outside director's stock ownership, the interactive term is negative and statistically significant. These findings

¹⁸⁷ The exception is that when the CEO is also the Chairman, he is less likely to experience disciplinary turnover.

suggest that good governance, as measured by those single board attributes, increases the probability of disciplinary turnover for poorly performing firms.¹⁸⁸ The interactive term is significantly negative for CEO-Chair duality, which means that when the CEO is also the Chairman, he is more likely to experience disciplinary turnover given poor firm performance.¹⁸⁹ Moreover, both the GIM and BCF measures of good governance are negatively related to the probability of disciplinary turnover for poorly performing firms. This conclusion suggests that better governed firms as measured by the G and E indices are less likely to experience disciplinary management turnover in spite of their poor performance.

Finally, both the TCL compliance rating and Gov-Score measures of good governance are unrelated to the probability of disciplinary turnover for poorly performing firms. These findings would again appear to underscore the hazard of constructing a governance index using multiple indicators of board structure and processes, charter provisions, and management compensation structure. Accordingly, of all of the measures of governance quality evaluated by Bhagat and Bolton, only the outside directors' stock ownership measure is related to both measures of performance, firms' future accounting profitability, and disciplinary management turnover upon poor performance. This indicates more convincingly than the findings regarding accounting performance that the more complex measures of firms' governance quality generated by index

¹⁸⁸ The finding that the probability of disciplinary CEO turnover (given poor prior firm performance) increases with greater board independence is consistent with similar findings in Weisbach, *supra* note 113.

¹⁸⁹ This result is counterintuitive, given that a CEO-Chairman is thought to be more powerful, and hence more entrenched, than a CEO who is not Chairman. One speculative explanation of this finding is that if the board is actively engaged in policy-making when the CEO is not the chair, it is possible that it does not have to replace the CEO to implement a new strategy to improve performance. This result would also seem to be contrary to the implication of the prior finding that CEO-Chair duality is negatively related to overall performance, or, at least, to indicate that the prior analysis may obscure nonlinearities in the relation between performance and governance, or that the relation between board independence and structure, as represented by the identity of the chairman, and CEO entrenchment is more subtle than that suggested by the governance literature or than the relation captured by the system of equations 1a-1d.

construction need not be superior to a single governance variable. It also provides support for proposals to compensate directors with stock.¹⁹⁰

4. More General Lessons Gleaned from the Literature

The conclusion of our analysis of the relation between a variety of measures of corporate performance and governance is that no one governance index does very well, let alone clearly outperforms the other indices or single governance components. This conclusion is at odds with the findings of the index constructors. And, more importantly, it has noteworthy implications for investors purchasing the products and services of commercial governance index providers, as well as for regulators and legislators. This Part outlines those implications.

A. Choice of an Index

The initial lesson that should be drawn from the corporate governance literature is that there is at present no best governance index with which to identify a firm's governance quality. The best measure of governance varies with the context for which it is to be used, as different measures of good governance are correlated with different performance measures. It is, as a consequence, not a straightforward matter to provide investors who wish to use governance to

¹⁹⁰ Charles Elson has been a persistent proponent of outside director stock compensation as a solution to governance problems. See, e.g., Charles M. Elson, *Executive Overcompensation—A Board-Based Solution*, 34 B.C.L. Rev. 937 (1993); Charles M. Elson & Christopher J. Gyves, *The Enron Failure and Corporate Governance Reform*, 38 Wake Forest L.Rev. 855 (2003). If the incentive effects of equity compensation for directors would be the same as for CEOs, then compensation through stock options might be questionable, in light of research suggesting that CEO compensation in stock options, as opposed to stock or restricted stock, is associated with accounting improprieties. See Natasha Burns & Simi Kedia, *The Impact of Performance-based Compensation on Misreporting*, 79 J. Fin. Econ. 35 (2006) (finding that CEO's stock option holdings are significantly related to accounting restatements but CEO holdings in stock or restricted stock are not). However, the level of compensation provided directors is far less than that awarded managers, which fact should lessen the risk of such perverse incentives from option compensation, and a recent paper, using a more refined matching statistical technique, finds no relation between any form of CEO equity incentive compensation and accounting improprieties. See Christopher S. Armstrong, Alan D. Jagolinzer & David F. Larcker, *Chief Executive Officer Equity Incentives and Accounting Irregularities* (2008), available at <http://ssrn.com/abstract=1132411> (propensity matching of firms so as to differ solely on the dimension of executive incentive compensation, rather than on whether the firm has issued a restatement, the approach of other studies).

predict performance with an appropriate proxy. For example, if accounting measures of performance are of concern, then the G and E indices could be sensible measures to use. However, those measures are inappropriate if the performance criterion is whether top management will be replaced following poor performance. Indeed, the single governance variable of outside directors' stock ownership is related to both of those performance measures and thus that governance measure would serve investors better than any of the indices.

Moreover, if future stock returns (the conventional performance measure of concern to investors) are the focus of inquiry, then none of the academic indices, nor the related commercial ones, are helpful. In short, consumers of indices need to be aware of the indices' considerable limitations, as most consumers' investment purposes will, no doubt, not be as narrowly focused as any one index's possible value-added. The danger for investors, particularly the more poorly informed, is that indices can create the illusion of certainty regarding an assessment of firms' governance quality, when reality is, in fact, quite muddy. In our view, the information gleaned about a firm from its ranking on an index should be treated as merely one of many potential pieces of information that might be relevant for fiduciaries' investing or voting decisions.

Beyond an agnostic perspective on the value of governance indices, are there any further lessons to be drawn by institutional investors who, at present, are the primary consumers of proprietary governance rating services? As we have already noted, stock ownership of outside directors appears to offer a superior method of ranking firms' governance quality than the more complex governance indices (see tables 1-4). It is, of course, cheaper to acquire (it can be identified by self-help without much difficulty). Should institutional investors accordingly shun commercial products in favor of using median director equity stock holdings as a proxy of quality, or is there some other value from their use? Because investors purchasing governance

services are sophisticated, and often for-profit, institutions, it would not be plausible to conclude that they have been manipulated by the marketers of the indices to purchase a good or service with little value-added (although we do think that some marketers are far too optimistic regarding the value added of their products¹⁹¹). Rather, there are, to our minds, at least three explanations that are not related to obtaining the best measure of the quality of firms' corporate governance for why there is a flourishing market for the products.

First, reliance on an index provider might be a relatively inexpensive way of fulfilling fiduciary obligations for routine matters, in which institutions can refer to an externally-generated governance index for investment or proxy voting decisions (or the recommendation of the index provider regarding the decision), even if it might lead to non-value-maximizing decisions in some cases.¹⁹² Second, it may offer institutions holding numerous portfolio firms a cost-effective means of obtaining information about governance characteristics of specific interest to them: In addition to their rankings, commercial services provide their customers with the underlying data. Third, albeit more problematic in our view, a firm's ranking on an index is easier for a fund manager to understand, as well as to explain to others as the basis for an investment or voting decision, than recourse to a more complicated, multifaceted description of a firm's combination of governance features.

The simple elegance of an index—in which one summary number describes a

¹⁹¹ Both Glass Lewis and ISS, for example, assert that their indices are positively correlated with performance, see note 47 *supra* (quoting Glass Lewis' website) and ISS Overview, *supra* note 56.

¹⁹² For data suggestive of such an explanation see Martijn Cremers & Roberta Romano, Institutional Investors and Proxy Voting: The Impact of the 2003 Mutual Fund Voting Disclosure Requirement, Yale ICF Working Paper No. 07-10 (2007). Cremers and Romano find that mutual funds' voting support for management equity incentive compensation plan proposals increased after the funds' votes had to be disclosed in firms with higher stock ownership of outside directors. They offer as a possible explanation that the funds began keying on this good governance feature—it is one of ISS' index components—as a defensive strategy to deflect criticism against their supporting management in what has become an increasingly controversial voting context.

complicated phenomenon—is, however, not only its most promising feature, but also its most perilous. That is because, as we have hopefully by now made transparent, the allure that one number can capture everything one needs to know about a firm’s governance, given our present state of knowledge, can, in fact, be highly misleading. The interactions across governance components and a firm’s operating environment are exceedingly complex, and not self-evidently capable of being collapsed into one dimension. Yet there is a seeming instinctive human predisposition that favors summary measures over more complex data processing, as they reduce cognitive transaction costs by providing a readymade means of comparison.

An analogy to financial asset pricing models illustrates the strong human desire for simplicity in a muddled world. One of the most fundamental advances in modern finance was the capital asset pricing model, which identified a single variable, beta, as the measure of an asset’s risk and hence the determinant of its market price.¹⁹³ But a substantial body of empirical research testing the model now indicates that it does not hold over many time periods, and suggests that multi-factor models may do better at prediction.¹⁹⁴ Despite the accumulating evidence questioning the capital asset pricing model, it is still used in both the academy and practice, and indeed remains the textbook approach to asset pricing.¹⁹⁵ As a prominent financial economist put it in explaining beta’s persistence, “[beta} is a simple, easy-to-understand

¹⁹³ Stephan A. Ross, Randolph W. Westerfield, Jeffrey F. Jaffe, *Corporate Finance* 295 (7th ed. 2005).

¹⁹⁴ Burton G. Malkiel, *A Random Walk Down Wall Street* 231-239 (rev. ed. 2003).

¹⁹⁵ For the capital asset pricing model’s centrality in the leading textbooks see, for example, Ross et al., *supra* note 141; Richard A. Brealey, Stewart C. Myers, & Franklin Allen, *Principles of Corporate Finance* (8th ed. 2006). For real world use see John R. Graham and Campbell R. Harvey, *The Theory and Practice of Corporate Finance: Evidence from the Field*, 61 *J. Fin.Econ.* 187 (2001) (73 % of surveyed managers used the capital asset pricing method to estimate the cost of capital); Rutherford B. Campbell, *Syracuse L. Rev.* (2003) (53% of Delaware appraisal cases decided after the Delaware Supreme Court permitted the use of modern finance techniques used the capital asset pricing model or a weighted average cost of capital for the discount rate calculation).

measure,” even though “no single measure is likely to capture [an asset’s risk] adequately.”¹⁹⁶

The proclivity to favor summary measures over more complex multivariate valuations is, however, more troubling in the case of governance indices than asset pricing models, for in contrast to governance indices, beta has a sound foundation in economic theory,¹⁹⁷ whereas we have a near total absence of theoretical work on the interaction of corporate governance institutions and performance.¹⁹⁸

B. Choice of Regulatory Regime

A further important implication of the finding that any connection between governance and performance varies by context (that is, by performance measure or by firm characteristics) involves the appropriate form of governance regulation: It should be selected so as to maximize the flexibility afforded to adoption of standards. That is because, when the benefits from a particular governance mechanism are dependent upon the context, regulation must be sufficiently flexible to permit variation in governance requirements to suit the situation. Governance regulations that are mandates decidedly do not meet such a criterion.

In particular, the research we have analyzed on the relation between corporate governance and performance most definitely does not support the “one-size-fits-all” approach to

¹⁹⁶ Malkiel, *supra* note 138, at 240.

¹⁹⁷ Brealey et al., *supra* note 143, at 192-197. There is disagreement over the weight of the evidence against beta, and as one leading textbook puts it “There is no doubt that the evidence on the CAPM is less convincing than scholars once thought. But it will be hard to reject the CAPM beyond all reasonable doubt. Since data and statistics are unlikely to give final answers, the plausibility of the CAPM *theory* will have to be weighed along with the empirical ‘facts’” *Id.* at 197.

¹⁹⁸ For a very recent effort that would appear to be the first paper to attempt to provide such a theory, modeling in a unified framework all of the following corporate governance mechanisms: boards, executive compensation, shareholder voting and activism, and the market for control, see Thomas H. Noe, Michael J. Rebellio, and Ramana Sonti, *Activists, Raiders, and Directors: Opportunism and the Balance of Corporate Power* (2008), available at <http://ssrn.com/abstract=1102902>. The value of the median directors’ stockholdings is, of course, also a single number that we have contended is a better proxy for a firm’s governance than any of the indices. In contrast to the indices, and similar to beta, there is an economic and political theory supporting its use, and the empirical data, reported in tables 1-4, corroborate its effectiveness.

governance mandates. That approach has, post-Enron, been the preferred regulatory approach to governance of both Congress—as exemplified by SOX—and the stock exchanges—in their implementation and expansion of SOX requirements—whose rules are adopted under the aegis of the SEC,. Those rules, as earlier noted, mandated most prominently that key board committees consist of all independent directors. Mandates dictate firms’ adoption of governance components that the mandator considers best practices, whether or not they are suitable for a particular firm, just as an index ranks firms by whether or not their practices are in accord with what the index-creator considers good governance, and not by whether they are an individually good fit. Because there is no one best governance index—as we have discussed, none of the indices is correlated with many of what are widely thought to be relevant measures of performance, and by construction none takes into account the complex relations among governance institutions—shoe-horning firms into a uniform set of governance institutions could generate substantial costs for investors without any appreciable benefit.

More specifically, the data indicating that good governance measures are substitutes suggest that what is good governance for one firm need not be good governance for another. Given such a relationship, it would not be desirable for all firms to fulfill all components in a good governance index, since for some firms the provisions will be working at cross purposes. Yet governance mandates do precisely that. For example, the independent director mandates of SOX and the stock exchanges permit no exceptions,¹⁹⁹ and this requirement prevents firms from adapting their governance institutions to fit their individual circumstances. Accordingly, firms

¹⁹⁹ See U.S. Securities and Exchange Commission, Standards Relating to Listed Company Audit Committees Securities Act Release No. 33-8220, Exchange Act Release No. 34-47,654, 68 Fed. Reg. 18,788, 18,792-93 (Apr. 16, 2003); Roberta Romano, The Sarbanes-Oxley Act and the Making of Quack Corporate Governance, 114 Yale L.J. 1521, 1595 n. 214 (2005) (noting how the SEC’s implementation of SOX’s audit committee mandate altered the former stock exchange approach permitting deviations from fully independent audit committees post-SOX).

can no longer engage in the governance tradeoff identified by GHS that firms often chose before the adoption of those mandates, substituting the market for corporate control in place of independent boards as the monitor of management and thereby presumably obtaining operational benefits from the expertise provided by non-independent (affiliated) directors.

Although they are not phrased as mandates, the same issue arises when activist institutional investors and their advocacy organizations, such as the CII, advance the adoption of uniform governance institutions by their advocacy of conformance to a best practices list.²⁰⁰ The objective of a “best practices” approach is equivalent to that of a regulatory mandate, to have all firms adopt identical governance institutions. Of course there is a difference between best-practice advocacy and actual mandates: Best-practice advocates can only seek their preferred governance regime’s effectuation by shareholder proposals and other forms of pressure on individual firms (such as withholding votes from directors or engaging in media campaigns against management), whereas a government mandate attains compliance across the board by fiat. But that difference does not make the private advocacy of conformance with a best practices list approach appreciably less troubling.

An example of the problematic aspect of this private sector version of governance mandates is the policy position of many activist investors that firms should repeal defensive tactics.²⁰¹ GHS’ finding that firms with strong, independent boards adopt numerous takeover defenses suggests that efforts to remove defenses may well be misguided by disregarding the need for governance tradeoffs: For some firms board monitoring appears to substitute for the market for control, with takeover defenses being adopted, as GHS speculate, to obtain the benefit

²⁰⁰ See, e.g., California Public Employees’ Retirement System, Global Principles of Accountable Corporate Governance 9 (May 2008), available at <http://www.calpers-governance.org/principles/docs/pub-20-2008-5-1.pdf>.

²⁰¹ See, e.g., *id.* at 18.

of avoiding myopic behavior, such as underinvestment, by managers concerned about takeover threats.²⁰²

The parallelism noted between regulatory mandates and institutional investor activists' best practices approach leads to a further question regarding the efficacy of "comply or explain" governance regimes, which are usually characterized in the literature as the alternative to the United States' mandatory approach.²⁰³ Comply or explain is the approach to governance taken by regulators in, among others, Canada, the United Kingdom, and many nations of the European Union.²⁰⁴ Under this regulatory approach, firms must either comply with a list of best practices or disclose the reason for any noncompliance.

The best practices lists underlying a comply or explain regime are, in essence, governance indices, in which each item on the list is equivalent to one of the components in an equally-weighted index. This is because the regulator expects firms to comply with all of the approved practices on its list, and full compliers are considered firms with the best governance, just as the constructor of an index considers it desirable for all firms to have all index components, such that the firm with the maximum sum (highest value of the index) is identified as the one with the highest quality governance. That is the import of requiring firms to explain a failure to comply: The presumption is that firms should comply, for otherwise there would be no

²⁰² Gillan et al., *supra* note 67. For a model of managerial myopia in response to takeovers see Jeremy C. Stein, *Takeover Threats and Managerial Myopia*, 96 *J. Pol. Econ.* 61 (1988).

²⁰³ See, e.g., George S. Dallas & Hal S. Scott, *Mandating Corporate Behavior: Can One Set of Rules Fit All?* 18 (2006), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=907346 (identifying the U.K./European comply or explain model as "viable" "alternative" or "rival" to the United States' prescriptive approach),

²⁰⁴ See e.g., Anita Anand, Frank Milne and Lynnette Purda, *Voluntary Adoption of Corporate Governance Mechanisms* (2006) (Canada), available at <http://ssrn.com/abstract=921450>; Paul Davies, *Introduction to Company Law* 131 (2002) (United Kingdom); Statement of the European Corporate Governance Forum on the comply-or-explain principle, (Feb. 22, 2006), available at http://ec.europa.eu/internal_market/company/docs/ecgforum/ecgf-comply-explain_en.pdf (European Union).

reason to require an explanation for non-conformance.

Because non-compliers in a comply or explain regime have the burden of explaining away their decisions, noncompliance can have a chilling effect, dissuading management from adopting governance mechanisms that would otherwise be beneficial (i.e., the requirement of an explanation for noncompliance could be taken to imply that something is awry). But if no one index is associated with better governance objectives in all contexts—as we have seen, for instance, in the reversal of the effectiveness rankings of the G and E indices going from operating performance to disciplinary management turnover as the performance measure under consideration—then that is no doubt also true of adherence to any one best practices list. Accordingly, requiring firms to justify noncompliance is inappropriate and may be imposing needless costs. Consistent with this contention, the bulk of the empirical studies of comply or explain regimes investigating whether firms in compliance with best practices are superior performers to non-compliant firms find that compliers do not outperform noncompliers.²⁰⁵

²⁰⁵ See N. Vafeas & E. Theodorou, *The Association between Board Structure and Firm Performance in the UK*, 30 *Brit. Accounting Rev.* 383 (1998) (finding no relation between compliance and performance, as measured by Tobin's Q); C. Weir, D. Laing & P.J. McKnight, *Internal and External Governance Mechanisms: Their Impact on the Performance of Large UK Companies*, 29 *J. Bus., Fin. & Accounting* 579 (2002) (same); Carol Padgett & Amama Shabbir, *The UK Code of Corporate Governance: Link between Compliance and Firm Performance*, University of Reading ICMA Centre Discussion Papers in Finance DP2005-17 (2005) (finding positive relation between compliance and performance, as measured by capital gains and dividends, using GIM-like constructed index of what authors consider to be the "spirit" of compliance, and not simply "formal" compliance used in other studies; but no relation between compliance index and accounting measures of performance); Jochen Zimmermann, Igor Goncharov & Joerg-Richard Werner, *Does Compliance with the German Corporate Governance Code Have an Impact on Stock Valuation? An Empirical Analysis*, 14 *Corp. Governance: An Int'l Rev.* 432 (2006) (compliance by German firms, defined by deviations from the governance code numbering less than the median positively related to non-market adjusted stock returns and prices). Moreover, the literature investigating the impact of key governance mechanisms included in the best practices lists of the major comply or explain regimes is consistent with those results: Independent boards are consistently not associated with superior performance, nor are firms with separate CEOs and board Chairs. See *supra* notes 21 and 108 (collecting references to studies on independent boards and board duality, respectively); Elisabeth Dedman, *The Cadbury Committee Recommendations on Corporate Governance—A Review of Compliance and Performance Impacts*, 4 *Int'l J. Mgmt Rev.* 335 (2002) (reviewing studies on impact of

The upshot is that, in selecting a governance regulatory regime, a disclosure regime without reference to a comparative benchmark would be a more appropriate regulatory framework than a comply or explain, let alone a mandatory governance, regime, as such a disclosure regime would be most consistent with the spirit of the findings of the governance literature.²⁰⁶ That is because a straightforward disclosure approach of a firms' governance features does not attempt to identify best practices and thus avoids the illusion that we are in possession of knowledge that we obviously do not have. In a governance disclosure regime, firms do not have to explain why they follow a specific governance practice whether or not it differs from that of other firms. They disclose their governance structures and investors are left to make of it what they will. Such a regime would, in all likelihood, impose some informational costs on investors compared to a comply or explain regime, since it is altogether conceivable that it would be more difficult to compare firms on governance dimensions, as the disclosures will not reference a benchmark, the hallmark of the "comply or explain" approach. But that is the precise advantage of a disclosure-only regime. It would eliminate the false promise that is embodied in a best practices list or governance index, that a set of practices exists, known with any substantial degree of certainty, against which all firms should be benchmarked.

It is possible that a disclosure regime might have a minor chilling effect on firms, as disclosing practices that deviate from the disclosed practices of a majority of firms might cause some investors to question a firm for nonconformance. In such a scenario, firms whose

board independence and duality to evaluate whether the United Kingdom's comply or explain regime has improved performance).

²⁰⁶ We do not in this paper address the normative question concerning the appropriate level of governance regulation in a federal political system such as the United States. As one of us has maintained, see Roberta Romano, *The Advantage of Competitive Federalism for Securities Regulation* (2003), if a disclosure regime is the preferable governance regime, as we advocate here, then a competitive regulatory system in which each firm chooses its regulator will generate that mode of regulation, given regulatory competition's alignment of incentives and interests among issuers, investors, and regulators.

governance regimes were nonconforming to most other firms or some prominent investors' or proxy advisory services' governance check lists might feel pressed to explain their institutional arrangements. We think that such a scenario is unlikely, but were that to be the case, in contrast to a mandated comply or explain regime, such pressure to conform is being generated by financial markets, which is the more appropriate source of give and take in the pricing of stock, as opposed to a regulatory authority.²⁰⁷

A final regulatory issue concerns the implication of the analysis for firms in other nations. In recent years, corporate governance has been emphasized across the globe, with the World Bank advocating emerging markets' adoption of best practices similar to those emphasized by institutional investor activists and included in the commercial services' governance indices evaluating U.S. firms.²⁰⁸ Is the same agnostic approach to governance that we advocate for U.S. firms sensible to apply to firms operating in developing economies? The

²⁰⁷ Iain MacNeil and Xiao Li provide some evidence that explanations offered by noncompliers in the U.K.'s comply or explain regime are not of concern to investors, at least when the firm's stock is performing well. See Iain MacNeil & Xiao Li, "Comply or Explain": Market Discipline and Non-Compliance with the Combined Code, 14 *Corp. Governance: An Int'l Rev.* 486 (2006). They find that the share prices of noncompliers with the U.K. combined code outperformed the market but that those firms' explanations of their noncompliance were, in the authors' view, completely uninformative, and the authors therefore hypothesize that it is simpler for investors to ignore the reasons for noncompliance and instead to require proof that noncompliance "works," that is, to use stock performance as a proxy for the merits of noncompliance with code features. See *id.* at .

²⁰⁸ The World Bank has hosted programs to encourage nations to adopt corporate governance reforms, such as the 3rd OECD/World Bank Asian Corporate Governance Roundtable held in Singapore in April 2001, see http://www.oecd.org/document/23/0,2340,fr_2649_37439_1868183_1_1_1_37439,00.html, and has sponsored research to identify the relation between development and legal variables involving good governance, more broadly defined in terms of the business and legal environment and finance-related law reforms protecting property and contract rights, see Kevin E. Davis, What Can the Rule of Law Variable Tell Us About Rule of Law Reforms, 26 *Mich. J. Int'l L.* 141, 145 (2004), and World Bank, *Initiatives in Legal and Judicial Reform* (2002), available at <http://siteresources.worldbank.org/BRAZILINPOREXTN/Resources/3817166-1185895645304/4044168-1186409169154/18initiativesFinal.pdf>. More specifically, the International Finance Corporation ("IFC"), a financing arm of the World Bank, has emphasized adoption of corporate governance best practices by firms in the emerging markets in which it operates. See Mike Lubrano, *Why Corporate Governance?* (2003), available at <http://www1.worldbank.org/devoutreach/march03/article.asp?id=194> (good corporate governance a "priority" for IFC and it works with its "clients to improve their governance").

empirical research on which our analysis of governance indices, and hence of best practices approaches, relies of course only examines the relation between governance and performance of U.S. firms and is not, accordingly, directly applicable to firms in other environments.

We believe that the legal and political background components of good governance may be more universal, and more important for corporate performance, than firms' own corporate governance. For example, the rule of law—which includes respect for property rights and an independent judiciary—and anti-corruption efforts are likely to have a greater impact on corporate growth and performance than are firm-level corporate governance reforms.²⁰⁹ Despite the intuitive plausibility of the assumption that such legal and political institutions are universally desirable, within the law and development literature the premise that economic development is associated with improvements in the rule of law is contested, and some commentators believe that local culture, organization, and context is critical in defining the relation between “rule of law” institutions and economic development.²¹⁰ That literature suggests that even when considering the essentials of a modern legal system, tailoring reforms on a country-by-country basis may be preferable to a “one-size-fits-all” approach. From such a perspective, there would accordingly be no reason to advocate a different corporate governance approach for emerging markets than we advocate for developed ones.

Further complicating any extrapolation from our analysis of the relation between

²⁰⁹ This is the perspective of the World Bank's Doing Business project, which tries to measure features of law and development, determine the relationships between those features, develop benchmarks for assessing legal systems, and suggest reforms (as a condition for financing), although the project's approach is not without its critics. For a summary and critique of the World Bank's approach, see Kevin E. Davis & Michael B. Kruse, *Taking the Measure of Law: The Case of the Doing Business Project*, 32 *Law & Soc. Inquiry* 1095 (2007).

²¹⁰ For a thorough literature review and discussion of these law and development issues see Kevin E. Davis & Michael J. Trebilcock, *The Relationship between Law and Development: Optimists Versus Skeptics* (2008); Michael J. Trebilcock & Ron Daniels, *Rule of Law Reform and Development* 1-42, 332-355 (forthcoming 2008).

performance and governance in U.S. firms is a difference in corporate organization across nations. For instance, our finding regarding the importance of outside directors' stock ownership for corporate performance may not be relevant to firms in emerging nations. That irrelevance arise from dramatic differences in corporate ownership structures. The primary agency problem for public corporations in the United States (along with the United Kingdom) is that between managers and shareholders, and those firms' governance mechanisms are accordingly directed at resolving that agency problem. In contrast, in most emerging markets, the primary agency problem is that between a dominant shareholder and minority shareholders (the manager-shareholder agency problem is not as severe because the dominant shareholder is often the manager or has very good incentives to provide close monitoring of the manager). Accordingly, greater stock ownership of outside directors, which would appear to mitigate agency problems in developed markets, may well be less effective in emerging markets.

C. Caveats for Courts

Finally, we offer the following cautionary note for courts. We are not aware of governance indices having been a subject of judicial notice. But it would seem plausible to expect the plaintiff's bar in shareholder litigation in due course to seek to employ the evidentiary power of low governance ratings (given marketers' emphasis on a link between indices and performance). Plaintiffs, that is, could attempt to bolster fiduciary breach claims with reference to firms' governance failures as identified by commercial indices, and scholarly articles that find some relation between performance and an index.

In that eventuality, we would suggest that courts should evaluate such claims with more than a few grains of salt, and should consider, for instance, whether the alleged breach can be related to a context in which the governance measure to which the plaintiff refers is associated

with better performance, or whether the firm rates low on all governance indices, including single dimensions that have been found to be of equal or superior value to an index. Such considerations might make for a more plausible claim that the firm's quality of governance is poor. But even then, we do not think that it should be probative for determining directors' negligence or trumping the applicability of the business judgment rule. Rather, we think it would be more appropriate for a court to require a plaintiff to be able to establish a nexus between the governance failure (the low score's source) and some action or inaction of the board producing the harm at issue.

5. Conclusion

The renewed focus on corporate governance following the collapse of Enron and other financial scandals has hastened the creation of governance indices, marketed primarily to institutional investors, as measures of firms' governance quality that can be used to inform investment and proxy voting decisions. The notion animating index construction is that because corporate governance operates on many dimensions, it is of value to combine the numerous elements of a firm's governance system into one number representing the quality of the firms' governance. The effort to construct a good index—by academics as well as commercial providers of governance services—is considered urgent by many in the belief that corporate performance is a function of good governance.

While identifying a measure of governance quality is a commendable idea in theory, in practice, the existing indices fail to capture the diverse ways in which governance operates in firms for two reasons. First, no one index can predict a firm's performance on all of the performance measures that are thought to be important to investors. Indeed, a simple single

governance variable, outside directors' stock ownership, performs better than the leading academic indices, as it is positively correlated with more performance measures. Second, indices are constructed so as to treat all component governance mechanisms as complements, when the data suggest that several such mechanisms are actually substitutes for, and not complements to, each other and the relation appears to vary across firm characteristics and industry sectors. In short, one size does not fit all. Good governance is best understood as highly context-specific, something that even the best-constructed index simply cannot capture and convey.

These limitations on the effectiveness of an index have two broad policy implications. First, the most widespread forms of governance regulation need to be rethought because they mimic the approach of indices: Both prescriptive mandates (the U.S. approach post-Enron) and comply or explain regimes (most other developed economies', including the Canadian, U.K., and European approach) identify governance institutions that all firms are expected to adopt. A more appropriate regulatory approach, in our view, is a straightforward governance disclosure regime, which is fully cognizant of the costs and benefits of disclosure. Such a regime acknowledges that there is no one best benchmark or set of best practices that is appropriate for all, or even most, firms. Second, investors should treat indices for what they are, one of a multitude of pieces of information of possible interest about firms' quality, that cannot predict future stock market performance.

Appendix A: Corporate Governance Indices

1. Gompers, Ishii & Metrick (GIM) Governance or “G” Index

Groupings of the governance provisions in the index:

1. ADelay”: Four provisions for delaying hostile takeover bidders (the presence of blank check preferred stock, a classified board, restrictions on shareholders’ ability to call special meetings, and restrictions on shareholders’ ability to act by written consent).
2. AVoting”: Six provisions involving shareholder voting rights (the presence of cumulative voting, confidential voting, supermajority voting for business combinations, dual class stock, and limitations to shareholders’ ability to amend the bylaws or certificate of incorporation).
3. AProtection”: Six provisions protecting directors and officers from legal liability or compensating them for termination (limited liability provisions, indemnification provisions in charters or bylaws, indemnification contracts, golden parachutes, severance contracts not conditioned on control changes, and compensation plans with changes-in-control provisions).
4. AOther@: Six other takeover defenses (the presence of antigreenmail charter provisions, fair price provisions, other constituent provisions, poison pills, silver parachutes, and pension parachutes).
5. AState@: Incorporation in a state with one of six state takeover laws (antigreenmail, business combination freeze, control share acquisition, fair price, other constitutencies and redemption rights statutes).

Because of overlap between some of the tracked firm-level provisions and state takeover laws, the 28 tracked provisions are collapsed into 24 unique provisions. Note that the groupings can

be questioned for lack of internal coherence. For example, blank check preferred is classified in the Adelay@ category, but it is used in the creation of poison pills, which are placed in the Aother@ category.

2. Bebchuk, Cohen & Ferrell (BCF) Entrenchment or “E” Index

Subset of provisions in the G index used (GIM=s grouping in parentheses):

1. Classified boards (Delay)
2. Limitations to shareholders’ ability to amend the bylaws (Voting)
3. Supermajority voting for business combinations (Voting)
4. Supermajority requirements for charter amendments (Voting)
5. Poison pills (Other)
6. Golden parachutes (Protection)

3. Brown and Caylor Gov-Score

Groupings of ISS minimally acceptable corporate governance standards comprising Gov-Score (factors also in the G index are in italics):

1. “Audit” (four factors): Audit committee consists solely of independent outside directors; auditors ratified by shareholders at most recent annual meeting; consulting fees paid to auditors less than audit fees paid; company has formal policy on auditor rotation
2. “Board of directors” (17 factors): Managers respond to shareholder proposals within 12 months of meeting; CEO serves on no more than two other public corporation boards; all directors attended at least 75% of board meetings or had valid excuse for non-attendance; size of board between six and 15; no former CEO is a director; no CEO related-party transactions listed in proxy; board has more than 50% independent outside directors; compensation committee comprised solely of independent outside directors;

CEO and Chairman positions are separated or lead director is specified; shareholders vote on directors selected to fill vacancies; annual director elections; shareholder approval to change board size; nominating committee comprised solely of independent outside directors; governance committee meets at least once a year; cumulative voting rights; board guidelines in proxy statement; policy requiring outside directors to serve on no more than five additional boards

3. “Charter/bylaws” (seven factors): Majority vote for merger; no poison pill or shareholder approved pill; shareholders can call special meetings; majority vote to amend charter or bylaws; shareholders may act by nonunanimous written consent; no blank check preferred stock; board cannot amend bylaws without shareholder approval or can do so only under limited circumstances

4. “Director education” (one factor): At least one director has participated in ISS-accredited director education program

5. “Executive and director compensation” (ten factors): No interlocking directors on compensation committee; non-employees do not participate in pension plans; no option repricing in past three years; shareholder approval of stock incentive plans; directors receive all or part of fees in stock; no corporate loans to executives to exercise options; last time shareholders voted on a pay plan ISS did not deem the cost to be excessive; average options granted in past three years as percentage of basic shares outstanding no more than 3% (Aoption burn rate@); prohibition on option repricing; expenses stock options

6. “Ownership” (four factors): All directors with more than one year of service own stock; officers’ and directors’ stock ownership at least 1% and not over 30%; executives subject to stock ownership guidelines; directors subject to stock ownership guidelines
7. “Progressive practices” (seven factors): Mandatory retirement age for directors; board performance regularly reviewed; board-approved CEO succession plan in place; board has outside advisors; directors must submit resignation upon change in job status; outside directors meet without CEO and disclose number of times they meet; director term limits
8. “State of incorporation” (one factor): Incorporation in state with no takeover statutes

All of the factors in ISS’s “charter/bylaw” grouping are also in the G index; the remaining G index components included in Gov-Score are in the “board of directors” category. In addition, although Brown and Caylor do not identify the state of incorporation factor as in the G index, it is essentially a composite of the four components in that index’s Astate@ grouping.

Subset of factors in Gov-7 (ISS grouping in parentheses; factors also in the E index are in italics):

1. Annual director elections (Board of directors)
2. No poison pill or shareholder approved pill (Charter/bylaws)
3. No option repricing in past three years (Executive and director compensation)
4. Directors subject to stock ownership guidelines (Ownership)
5. All directors attended at least 75% of board meetings or had valid excuse for non-attendance (Board of directors)
6. Average options granted in past three years as percentage of basic shares outstanding no more than 3% (Executive and director compensation)
7. Board guidelines are in each proxy statement (Board of directors)

Gov-7 was created by selecting the factors that were significant in two of three statistical approaches used to determine which of the 51 factors in Gov-Score drove the relation identified between that index and firm value: (1) a regression of Tobin's Q on the 51 factors and controls; (2) BCF's methodology, which separately regresses Tobin's Q on each factor, Gov-Score minus the factor, and controls; and (3) stepwise regression using a forward-selection technique in which variables are retained if they are significant at 10 percent (two-tailed test).

4. Proprietary Governance Indices

a. The Corporate Library Board Effectiveness Rating

The Corporate Library (TCL), an investor research firm established by Nell Minow, an investor activist, and that produces research reports and commentary on corporate governance, has developed a proprietary measure of the quality of firms' governance, called the "Board Effectiveness" rating, which is a letter grade from A to F, representing a weighted average of an assessment of the effectiveness of seven governance components and an eighth personal assessment of the TCL analyst of the company's governance quality.

Components in the rating:

1. Board Composition: Described as the only component not based primarily on board actions and decision-making, and related to an analysis of the historical governance patterns of firms that experienced governance failures, it consists of screens on director tenure, age, and independence, the number of active or former CEOs on the board, and whether a past CEO is chairman, and director "over-commitment" (sitting on more than four other boards)

2. CEO Compensation: Depends on the balance of fixed and variable pay, how much variable pay is in the form of stock, with numerical red flags, such as base salary over \$1 million, “excessive” options and high perquisite payments, and disclosure practices.
3. Shareholder Responsiveness: History of board’s response to successful shareholder proposals (those receiving a majority of the votes).
4. Litigation & Regulatory Problems: Based on the incidence of litigation and assessed fines, includes an evaluation of the amount of disclosure of current or potential liability exposure, and the existence of repeated regulatory infractions or fines.
5. Takeover Defenses: Detailed information provided on defenses, with better ratings assigned for unidentified “more shareholder friendly” defenses.
6. Accounting: Screen compares current quarter reports against prior four quarters for indicators of potential earnings management or other accounting concerns.
7. Strategic Decisionmaking: Focuses on board approval of mergers and acquisitions (with lower ratings assigned to approvals of mergers resulting in significant loss of shareholder value).
8. Analyst Adjustment: Analyst may adjust the board rating up or down for reasons that fall outside the regular scoring system.

The first two components, board composition and CEO composition, comprise half of the overall rating, with equal weights applied to the other five governance components. The analyst adjustment is described as “determined on an individual basis.”

TCL also reports a Best Practices Compliance score or benchmark, developed from other organizations’ guidelines, that ranges from 0 to 100. It considers the effectiveness rating, and not the compliance score, as the preferable metric of a company’s governance quality.

TCL's Best Practices Compliance Score is based on the following factors: whether the firm has a classified board, majority outside directors, independent chairman or lead director, audit committee of only independent directors, formal governance policy, and the number of directors who are over 70 years old, serve on more than 4 other boards and have more than 15 years of service.

b. GovernanceMetrics International (GMI) Market and Industry Indices

GovernanceMetrics International is an international governance rating organization, founded by individuals experienced in the investor relations and advising industry, that markets research and analyses principally to institutional investors. It provides advisory services to a variety of nonprofit organizations, such as stock exchanges, as well as to investors, but it does not provide proxy voting advisory services. Its "overall rating" governance score, which ranges from 1 to 10 and is derived from a statistical algorithm assigning numerical values to individual metrics falling within six general governance areas, is computed as a comparative score based on the governance practices and policies of other firms in the rated company's home state or region (the "home market" rating) or all firms in GMI's universe (the "global" rating).

Governance Areas ("Research Categories"):

1. Board Accountability
2. Financial Disclosure and Internal Controls
3. Shareholder Rights
4. Executive Compensation
5. Market for Control and Ownership Base
6. Corporate Behavior and Corporate Social Responsibility Issues

6. Institutional Shareholder Services (ISS) Corporate Governance Quotient

ISS is the market leader in the provision of proxy advisory and corporate governance services to institutional investors. It also provides governance and proxy consulting services to issuers. It has been in the advisory business for over two decades, during which it acquired competitors and expanded its services (acquiring most recently the proxy research firm, IRRC, in 2005, before it was itself acquired in 2006.) ISS rates companies according to a “Corporate Governance Quotient,” which is derived from 63 governance factors (also referred to as governance criteria) that are grouped into four key governance areas, combining eight governance categories on which companies are evaluated. The weights assigned to the individual components are a function of their correlations with performance measures. The ratings are calculated as percentages indicating where a firm stands in relation to other firms in its industry or market. (For example, a value of 97.5 means that the company outperformed 97.5% of firms in its industry or stock market index, according to ISS’ statistical algorithm combining governance factors.)

Governance Areas and Weights

1. Board of directors - 40%
2. Compensation - 30%
3. Takeover defenses - 20%
4. Audit - 10%

The eight most important governance variables that enter into the rating, in order of their weighting are:

audit committee with all independent outside directors; average options granted in past three years as percentage of basic shares outstanding no more than 2 percent or less or within one standard deviation of industry mean (“option burn rate”); all audit committee

members are financial experts; board controlled by supermajority (over 90%) of independent outside directors; board has only one non-independent director; directors subject to stock ownership requirements; board controlled by supermajority (between 75 and 90%) of independent outsiders; incorporation in state with no takeover statutes

The sixteen performance measures ISS used to test its governance rating factors, which are divided into four categories of performance, are as follow:

1. Risk. Two measures: Volatility; Altman's Z score (probability of bankruptcy)
2. Market. Two measures: Total Shareholder Return; Tobin's Q
3. Valuation. Three ratio measures: Price to Book; Price to Cash Flow; Price to Earnings
4. Profitability. Nine measures: Dividend; Return on Invested Capital; Return on Equity; Return on Investment; Cash Flow Return in Investment; Net Profit Margin; EBITDA Margin; Sales Growth; Free Cash Flow to Sales

The factors that ISS use change over time, reflecting changing trends in corporate governance. For example, it no longer includes a factor for whether firms expense options, because that accounting treatment is now required and no longer voluntary. In addition, it now includes a factor for whether the company has majority vote director elections, a governance issue that first appeared on activist institutional investors agenda in any serious form in 2005, and a factor for whether the company has backdated options, an accounting issue—some would call it a scandal—that first came to light in 2006.

d. Egan-Jones Proxy Services Corporate Governance Ratings

Egan-Jones Proxy Services provides assistance in proxy voting, offering research, recommendations and voting services (such as automated vote execution, recordkeeping and vote disclosure reporting). Although its affiliated business has provided credit rating analysis for

many years, it began to offer proxy recommendations commercially in 2003 (in conjunction with the increased emphasis on corporate governance and particularly the new SEC regulations regarding disclosure of mutual funds' voting). In addition to offering general voting evaluating the impact on "shareholder value," it provides voting guidelines tailored to certain labor union funds' needs, that ensure that "the rights and interests of labor are respected." Egan-Jones provides an "overall" rating and specific ratings on the following five factors:

1. Voting process
2. Board independence
3. Board skills
4. Financial performance
5. Disclosure/controls

How, if at all, it combines the five factors into an overall rating is not publicly disclosed. All six ratings are in the form of letter grades (with pluses and minuses).

e. Glass Lewis & Company

Glass Lewis & Company, which provides research and advisory services to institutional investors, was established in 2003 by Lynn Turner, chief accountant of the Securities and Exchange Commission during Arthur Levitt's chairmanship. It markets a governance ranking, termed the "Board Accountability Index," that is derived from BCF's research, and which it considers a "governance-enhanced" S&P 500 index. It uses a "modified market-cap weighting algorithm" that adjusts an S&P 500 index company's weight by the presence or absence of five of the six components of BCF's entrenchment index. The component that Glass Lewis excludes is the supermajority requirement for charter amendments.

Appendix B: Note on Instrumental Variables Analysis

The article's results and findings regarding the relative performance of governance indices in predicting corporate performance rely on Bhagat and Bolton's analysis of the inter-relationships among corporate governance, firm performance, capital structure, and ownership structure, using the set of simultaneous equations described in Part II.C of the text (equations 1a-1d).²¹¹ This Appendix reviews their choice of instruments for the dependent variables of performance, governance, ownership, and capital structure, and the results of statistical tests indicating the appropriateness of using the instrumental variables methodology to identify the relation between governance and performance.

1. Choice of Instrumental Variables

Performance - Treasury Stock: Palia suggests that a firm is most likely to buy back its stock when it believes the stock to be underpriced relative to where the managers think the price should be.²¹² This suggests that the level of treasury stock should be correlated with firm performance and firm value, but there is no reason to believe it is correlated with the other regressors, making it a valid instrument for performance.

Governance - Currently Active CEOs on Board: Prior researchers have emphasized the role of networks among CEOs that serve on boards, and the adverse impact on the governance of such firms.²¹³ *Ex ante*, this variable should be correlated with governance, but there is no reason to believe it will be correlated with performance. The percentage of directors who are currently active CEOs is therefore used as an instrument for governance.

²¹¹ Bhagat & Bolton, *supra* note 34.

²¹² Darius Palia, *The Endogeneity of Managerial Compensation in Firm Valuation: A Solution*, 14 *Rev. Fin. Stud.* 735 (2001).

²¹³ Kevin F. Hallock, *Reciprocally Interlocking Boards of Directors and Executive Compensation*, 32 *J. Fin. & Quantitative Analysis* 331 (1997); James D. Westphal & Poonam Khanna, *Keeping Directors in Line: Social Distancing as a Control Mechanism in the Corporate Elite*, 48 *Admin. Sci. Q.* 361 (2003).

Governance - Director Ownership: Several studies suggest that the percentage of stock owned by a firm's director may be a governance or monitoring mechanism.²¹⁴ Thus, it should be correlated with the governance measures. However, other research finds no consistent relationship between percentage stock ownership of directors and performance.²¹⁵ These findings suggest that director ownership could also make a valid instrument for governance in the performance equation.

Ownership - CEO Tenure-to-Age: A CEO with five years of tenure at age 65 is likely to be of different quality and have a different equity ownership than a CEO with five years of tenure at age 50. These CEOs likely have different incentive, reputation, and career concerns.²¹⁶ Therefore, we use the ratio of CEO tenure to CEO age as a measure of CEO quality, and as an instrument for CEO ownership.

Leverage - Altman's Z-Score: Following the literature, the modified Altman's Z-score, which is a measure used to predict the probability a firm will go bankrupt, is used as the instrument for leverage.²¹⁷ In robustness tests, lagged leverage is also used as an instrument for leverage; the results using this alternative instrument are qualitatively unchanged.

2. Evaluating the Instrumental Variables Estimation

²¹⁴ Core, Holthausen & Larcker, *supra* note 106; Linck, Netter & Yang, *The Determinants of Board Structure*, Univ. of Georgia Working Paper (manuscript 2005).

²¹⁵ Sanjai Bhagat, Dennis Carey & Charles Elson, *Director Ownership, Corporate Performance, and Management Turnover*, 54 *Bus. Law.* 885 (1999).

²¹⁶ For evidence on this hypothesis see Robert Gibbons & Kevin J. Murphy, *Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence*, 100 *J. Pol. Econ.* 468 (1992).

²¹⁷ See Edward I. Altman, *Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy*, 23 *J. Fin.* 589 (1968); Ivan Brick, Darius Palia & Chia-Jane Wang, *Simultaneous Estimation of CEO Compensation, Leverage, and Board Characteristics on Firm Value*, Rutgers Business School Working Paper (manuscript 2005); Jeffrey K. MacKie-Mason, *Do Taxes Affect Corporate Financing Decisions?*, 45 *J. Fin.* 1471 (1990). Ultimately, whether or not this is an appropriate instrument is an empirical question. Through the diagnostic tests discussed later in this Appendix, Bhagat and Bolton determine that the Altman's Z-score is indeed a valid instrument for leverage. Bhagat & Bolton, *supra* note 34. They also consider using marginal tax rate as an instrument for leverage, but it fails the Stock and Yogo weak instruments test, discussed at text and note 8, *infra*, and is consequently not used.

Bhagat and Bolton's analysis involves three steps:

1. Estimate the system of equations (1a-d) using OLS, 2SLS, and 3SLS;
2. Check the validity of the instruments used in 2SLS and 3SLS using the Stock and Yogo test for weak instruments (or other weak instrument tests),²¹⁸ and,
3. Use the Hausman specification test to determine which estimation technique is most appropriate.²¹⁹

It is important to note that if the instruments are deemed to be weak, then 2SLS and 3SLS can be very misleading. In this case, the Hausman specification test will lack information, and using OLS may be most appropriate. Thus, following all three steps appropriately is essential.

The Stock and Yogo test indicates whether or not the instruments used in the first-stage regression are 'strong'—that is, whether they have adequate predictive power for the endogenous regressor. If the first-stage F -statistic (or minimum eigenvalue) from regressing the endogenous regressor on the set of excluded instruments and any control variables not included in the structural equation exceeds the critical value (provided by Stock and Yogo), then the null hypothesis of weak instruments is rejected. If the first-stage F -statistic is less than the critical value, the instruments are weak and the IV estimates are potentially biased and inconsistent.

The Stock and Yogo test is the primary test of instrument validity that the analysis in Bhagat and Bolton uses. However, two other weak instrument tests are also applied in the analysis: the Hahn and Hausman test for weak instruments and the Hansen-Sargan test. The Hahn and Hausman test compares the forward and reverse 2SLS estimators.²²⁰ If the instruments

²¹⁸ James H. Stock & Motohiro Yogo, Testing for Weak Instruments in Linear IV Regression, in D.W.K. Andrews & J.H. Stock, eds., *Identification and Inference for Econometric Models: Essays in Honor of Thomas J. Rothenberg* 80 (2005).

²¹⁹ Jerry A. Hausman, Specification Tests in Econometrics, 46 *Econometrica* 1251 (1978).

²²⁰ Jinyong Hahn & Jerry A. Hausman, A New Specification Test for the Validity of Instrumental

are valid, the forward estimator should be equal to the inverse of the reverse estimator, adjusted for a bias term. The Hansen-Sargan test compares the residuals from the second-stage regression with the first-stage instruments and control variables. If there is no correlation (i.e. low R^2) in this regression, then the instruments are well-identified and valid. The results from using all three of these weak instruments tests are generally consistent throughout our analyses.

The Hausman test for endogeneity compares the OLS estimates with the IV estimates to see if IV estimation is necessary. The test statistic is constructed as follows:

$$h \equiv (\hat{\beta}_{OLS} - \hat{\beta}_{IV})'(\text{var}(\hat{\beta}_{OLS}) - \text{var}(\hat{\beta}_{IV}))^{-1}(\hat{\beta}_{OLS} - \hat{\beta}_{IV}).$$

This statistic has a chi-square distribution with degrees of freedom equal to the number of potentially endogenous regressors. If the difference between the OLS and IV estimates is “large,” then OLS is not adequate. This test is used to compare estimation techniques: OLS to 2SLS, OLS to 3SLS, and 2SLS to 3SLS. High h -statistics (low p-values) suggest there is a difference between estimation techniques. If the instruments are valid, this test suggests which estimation method should be used.

The two following supplementary tables based on the results in Bhagat and Bolton illustrate the process of using the different estimation techniques and diagnostic tests. Table A1 presents the results for the different governance variables in equation (1a) and each performance variable in the next year. It presents the results from all three estimation techniques—OLS, 2SLS, 3SLS—and compares them side-by-side. The Hausman test is used to determine which estimation technique is most appropriate, and this is highlighted by the bold result in each row-section. For example, in looking at the effect that the G-Index has on next year’s Tobin’s Q, we

Variables, 70 *Econometrica* 163 (2002). The “reverse” 2SLS estimator exchanges the left-hand side and right-hand side endogenous variables.

note that there is a negative and significant relationship in OLS; this result is consistent with GIM's findings that are discussed in Part I.B.1 of the text. However, when potential endogeneity between governance and performance is allowed, the Hausman test indicates that using OLS is inappropriate, and that we should be considering the 2SLS results. The coefficient in the 2SLS estimation is positive and marginally significant, which is contrary to GIM's results. This analysis highlights the critical importance of using an instrumental variables approach to allow for potentially endogenous regressors.

However, the results of the IV estimation are not reliable unless the instruments used are valid. Table A2 illustrates the process by which Bhagat and Bolton use the diagnostic tests to check for endogeneity and strength of instruments. Results are presented using ROA as the performance measure and with the G-Index and director ownership as measures of governance; the process is the same for the other governance variables. The top section of each panel indicates the coefficient on the governance variable from equation (1a); these results are the same as those presented in Table 1. The "Hausman Specification Test" section shows the comparison between the three estimation techniques. In Panel A for ROA_t , there is a difference between OLS and 2SLS and there is a difference between OLS and 3SLS, but there is no difference between 2SLS and 3SLS; thus, 2SLS is the appropriate technique. In Panel B for ROA_t , there is a difference between OLS and 2SLS, but not between OLS and 3SLS; thus, again 2SLS is the appropriate technique. The "Stock & Yogo Weak Instruments Test" section presents the F -statistics from the first-stage reduced form regression and the appropriate critical values from Stock and Yogo. In all cases, the F -statistic exceeds the critical value, suggesting that the instruments are indeed strong and the IV estimation is valid. Results for the other governance variables are similar.

Table A1: Comparison of Estimation Methods

This table presents the summary results from estimating equation (1) with seven different measures of governance and three different measures of performance. Only the coefficients on the governance variable in equation (1a) are presented; *p*-values are below in parentheses. All governance variables are as defined in Tables 1 and 2. The performance variables are Next Year's Return on Assets (ROA), Next Year's Stock Return, and Next Year's Tobin's Q. Equation (1) is estimated using OLS, 2SLS, and 3SLS. The Stock and Yogo (2005) weak instruments test is used to confirm that the instrumental variables approaches (2SLS and 3SLS) are valid. The Hausman specification test is used to determine which estimation method is most appropriate. The results from this test are presented in bold (for example, when considering the G-Index in the ROA equation, the Hausman test indicates that 2SLS least squares is the appropriate method to use)

	<i>Next Year's ROA</i>			<i>Next Year's Stock Return</i>			<i>Next Year's Tobin's Q</i>		
	OLS	2SLS	3SLS	OLS	2SLS	3SLS	OLS	2SLS	3SLS
GIM G-Index	-0.001 (0.03)	-0.011 (0.03)	-0.011 (0.02)	-0.003 (0.44)	-0.013 (0.71)	-0.014 (0.69)	-0.045 (0.00)	0.156 (0.11)	0.164 (0.10)
BCF E-Index	-0.005 (0.00)	-0.031 (0.02)	-0.032 (0.01)	0.001 (0.89)	-0.021 (0.81)	-0.022 (0.81)	-0.143 (0.00)	0.242 (0.33)	0.227 (0.36)
TCL Benchmark Score	0.000 (0.26)	-0.003 (0.27)	-0.003 (0.26)	0.002 (0.14)	0.000 (0.97)	0.000 (0.97)	0.003 (0.38)	0.037 (0.20)	0.048 (0.09)
BC GovScore	0.000 (0.85)	-0.005 (0.61)	-0.005 (0.65)	0.007 (0.09)	-0.049 (0.41)	-0.099 (0.04)	-0.003 (0.76)	0.034 (0.08)	0.125 (0.35)
Director Ownership	0.010 (0.00)	0.005 (0.00)	0.004 (0.01)	0.020 (0.00)	0.008 (0.64)	-0.005 (0.77)	-0.235 (0.00)	0.000 (1.00)	-0.003 (0.96)
CEO-Chair Duality	0.000 (0.88)	-0.029 (0.00)	-0.028 (0.00)	-0.007 (0.75)	-0.064 (0.29)	-0.058 (0.34)	-0.005 (0.94)	0.209 (0.23)	0.189 (0.28)
Board Independence	-0.052 (0.00)	-0.121 (0.00)	-0.120 (0.00)	-0.038 (0.42)	-0.250 (0.33)	-0.249 (0.33)	-0.666 (0.00)	0.634 (0.40)	0.662 (0.38)

Table A2: Illustration of Instrumental Variables Tests

This table presents the governance coefficients from estimating equation (1a) for both GIM's G-Index (Panel A) and the dollar value of director ownership (Panel B). Results are presented considering operating performance in all three time periods. At the top of each panel, the coefficients (*p*-values in parentheses) are presented. The Hausman specification test results are also presented; the higher the *h*-statistic, the greater the difference between estimation methods. Finally, the results from the Stock & Yogo weak instruments test are presented at the bottom of each panel. The *F*-statistics from the first-stage reduced form regressions are presented along with the appropriate critical values. Stronger instruments are represented by higher *F*-statistics.

Panel A: Gompers, Ishii and Metrick G-Index

	ROA _t			ROA _{t+1}			ROA _{t+1 to t+2}		
	OLS	2SLS	3SLS	OLS	2SLS	3SLS	OLS	2SLS	3SLS
Governance	-0.001 (0.10)	-0.013 (0.01)	-0.013 (0.01)	-0.001 (0.03)	-0.011 (0.03)	-0.011 (0.02)	-0.001 (0.02)	-0.004 (0.16)	-0.004 (0.15)
<i>Hausman Specification Test</i>									
	<i>h</i> -Statistic	<i>p</i> -value		<i>h</i> -Statistic	<i>p</i> -value		<i>h</i> -Statistic	<i>p</i> -value	
OLS - 2SLS	66.8	(0.00)		78.6	(0.00)		37.7	(0.10)	
OLS - 3SLS	48.8	(0.01)		69.3	(0.00)		103.4	(0.00)	
2SLS - 3SLS	20.0	(0.87)		18.1	(0.92)		31.6	(0.29)	
<i>Stock & Yogo Weak Instruments Test</i>									
	<i>F</i> -Statistic	Critical Value		<i>F</i> -Statistic	Critical Value		<i>F</i> -Statistic	Critical Value	
Governance	35.5	9.5		34.0	9.5		24.8	9.5	
CEO Ownership	215.2	9.5		232.0	9.5		172.1	9.5	
Leverage	98.7	9.5		107.0	9.5		87.7	9.5	

Panel B: Dollar Value of Median Director Stock Ownership

	ROA _t			ROA _{t+1}			ROA _{t+1 to t+2}		
	OLS	2SLS	3SLS	OLS	2SLS	3SLS	OLS	2SLS	3SLS
Governance	0.011 (0.00)	0.006 (0.01)	0.005 (0.02)	0.010 (0.00)	0.005 (0.00)	0.004 (0.01)	0.004 (0.00)	0.002 (0.16)	0.002 (0.18)

Hausman

Specification Test	<i>h</i> -Statistic	<i>p</i> -value	<i>h</i> -Statistic	<i>p</i> -value	<i>h</i> -Statistic	<i>p</i> -value
OLS - 2SLS	127.7	(0.00)	148.6	(0.00)	42.9	(0.04)
OLS - 3SLS	-2,123.0	-	1.8	(1.00)	17.3	(0.94)
2SLS - 3SLS	1,407.0	(0.00)	6.6	(1.00)	-16.7	-

Stock & Yogo Weak

Instruments Test	<i>F</i> -Statistic	<i>Critical Value</i>	<i>F</i> -Statistic	<i>Critical Value</i>	<i>F</i> -Statistic	<i>Critical Value</i>
Governance	180.2	9.5	185.1	9.5	139.5	9.5
CEO Ownership	250.5	9.5	257.7	9.5	197.5	9.5
Leverage	96.5	9.5	107.2	9.5	92.7	9.5

Table 1: Performance-Governance Relationship, Performance Measured by Return on Assets

This table presents the coefficients on the governance variable from equation (1a) estimated from the following system (*p*-values are in parentheses):

- (1a) Performance = f_1 (Ownership, Governance, Leverage, Log(Assets), Industry Performance, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Treasury Stock / Assets, ϵ_1),
- (1b) Governance = f_2 (Performance, Ownership, Leverage, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Median Director Ownership Percentage, Percentage Independent Directors, ϵ_2)
- (1c) Ownership = f_3 (Performance, Governance, Log(Assets), Leverage, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, CEO Tenure / CEO Age, ϵ_3)
- (1d) Leverage = f_4 (Performance, Governance, Ownership, Industry Leverage, Log(Assets), (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Altman's Z-Score, ϵ_4)

Operating performance ("ROA") is considered for three time periods: contemporaneous (ROA_t), next year (ROA_{t+1}), and next two years ($ROA_{t+1 \text{ to } t+2}$). The following governance variables are considered: the Gompers, Ishii and Metrick (2003) *G*-Index, the Bebchuk, Cohen and Ferrell (2004) *E*-Index, The Corporate Library (TCL) Benchmark score, the Brown and Caylor (2004) GovScore (data is available only for 2002), the dollar value of the median director's stock holdings, a dummy variable equal to 1 if the CEO is also the Chair of the board, 0 otherwise, and, the percent of directors who are independent. The sample consists of about 1500 of the largest U.S. corporations for the period 1998-2002; in some cases data constraints allow for consideration of only a shorter period.

Performance Measure	Governance Measure						
	GIM G-Index	BCF E-Index	TCL Benchmark Score	Brown & Caylor GovScore	\$ Value of Median Director's Holdings	CEO-Chair Duality (=1 if Dual)	% of Directors Independent
ROA_t	-0.013 (.01)	-0.034 (.01)	-0.005 (.05)	-0.004 (.60)	.006 (.01)	-0.029 (.00)	-0.131 (.00)
ROA_{t+1}	-0.011 (.03)	-0.031 (.02)	-0.003 (.27)	-0.005 (.61)	.005 (.04)	-0.029 (.00)	-0.121 (.00)
$ROA_{t+1 \text{ to } t+2}$	-0.004 (.16)	-0.015 (.07)	-0.002 (.21)	-	.002 (.16)	-0.017 (.00)	-0.068 (.01)

Table 2: Performance-Governance Relationship, Performance Measured by Stock Return

This table presents the coefficients on the governance variable from equation (1a) estimated from the following system (*p*-values are in parentheses):

- (1a) Performance = f_1 (Ownership, Governance, Leverage, Log(Assets), Industry Performance, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Treasury Stock / Assets, ϵ_1),
- (1b) Governance = f_2 (Performance, Ownership, Leverage, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Median Director Ownership Percentage, Percentage Independent Directors, ϵ_2)
- (1c) Ownership = f_3 (Performance, Governance, Log(Assets), Leverage, (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, CEO Tenure / CEO Age, ϵ_3)
- (1d) Leverage = f_4 (Performance, Governance, Ownership, Industry Leverage, Log(Assets), (R&D and Advertising Expenses) / Assets, Board Size, Stock Volatility, Altman's Z-Score, ϵ_4)

Stock return (“RETURN”) is considered for three time periods: contemporaneous (RETURN_{*t*}), next year (RETURN_{*t+1*}), and next two years (RETURN_{*t+1 to t+2*}). The following governance variables are considered: the Gompers, Ishii and Metrick (2003) *G*-Index, the Bebchuk, Cohen and Ferrell (2004) *E*-Index, The Corporate Library (TCL) Benchmark score, the Brown and Caylor (2004) GovScore (data is available only for 2002), the dollar value of the median director’s stock holdings, a dummy variable equal to 1 if the CEO is also the Chair of the board, 0 otherwise, and, the percent of directors who are independent. The sample consists of about 1500 of the largest U.S. corporations for the period 1998-2002; in some cases data constraints allow for consideration of only a shorter period.

Performance Measure	Governance Measure						
	GIM G-Index	BCF E-Index	TCL Benchmark Score	Brown & Caylor GovScore	\$ Value of Median Director's Holdings	CEO-Chair Duality (=1 if Dual)	% of Directors Independent
RETURN_{<i>t</i>}	-.010 (0.75)	-.044 (0.59)	-.018 (0.12)	.011 (0.73)	.012 (0.44)	-.024 (0.70)	-.157 (0.53)
RETURN_{<i>t+1</i>}	-.013 (0.71)	-.021 (0.81)	.000 (0.97)	-.049 (0.41)	.008 (0.64)	-.064 (0.29)	-.250 (0.33)
RETURN_{<i>t+1 to t+2</i>}	-.007 (0.64)	-.001 (0.97)	.003 (0.64)	--	.003 (0.72)	-.025 (0.30)	-.092 (0.40)

Table 3: Relationship Between Dollar Board Ownership And Return on Assets for the Subsequent Two Years

The sample consists of about 1500 of the largest U.S. corporations for 2002.

Ownership Quartile	Mean Dollar Value of Median Director's Ownership	Industry-Adjusted Return on Assets for the Subsequent Two Years
Lowest Ownership Quartile	\$94,366	-0.4%
Second	\$462,758	-0.1%
Third	\$1,267,629	0.2%
Highest Ownership Quartile	\$7,185,716	0.3%

Table 4: Multinomial Logit Model for Disciplinary CEO Turnover

This table presents the results from multinomial logistic regressions estimating the probability of CEO Turnover. The dependent variables are type of CEO turnover: 1 = Disciplinary turnover, 2 = Non-disciplinary turnover, 0 = no turnover. No turnover is the baseline category. The following control variables are included but not shown in the table: Firm's stock market returns during the previous two years, CEO stock ownership, CEO tenure, firm size, industry returns during the previous two years, year dummy variables. p-values are in parentheses.

Dependent Variable: Disciplinary turnover

	Governance Variable						
	GIM G-Index	BCF E-Index	TCL Benchmark Score	BC GovScore	\$ Value of Median Director's Holdings	CEO-Chair Duality (=1 if Dual)	% of Directors Independent
Governance	-0.040 (0.38)	-0.009 (0.92)	0.018 (0.24)	-0.064 (0.21)	-0.062 (0.26)	-0.790 (0.00)	-0.911 (0.09)
(Return, Last 2 years x Governance)	-0.480 (0.00)	-0.877 (0.00)	0.033 (0.49)	0.038 (0.84)	-0.284 (0.00)	-1.381 (0.04)	-4.416 (0.00)
Control Variables	Included	Included	Included	Included	Included	Included	Included
Years Included	2000-2002	2000-2002	2001-02	2002	2000-02	2000-02	2000-02
Sample Size	2,036	2,036	2,195	788	3,166	3,228	3,228

Table 5: Multinomial Logit Model for Non-disciplinary CEO Turnover

This table presents the results from multinomial logistic regressions estimating the probability of CEO Turnover. The dependent variables are type of CEO turnover: 1 = Disciplinary turnover, 2 = Non-disciplinary turnover, 0 = no turnover. No turnover is the baseline category. The following control variables are included but not shown in the table: Firm's stock market returns during the previous two years, CEO stock ownership, CEO tenure, firm size, industry returns during the previous two years, year dummy variables. p-values are in parentheses.

Dependent Variable: Non-disciplinary turnover

Governance Variable								
	Baseline Performance	GIM G- Index	BCF E- Index	TCL Benchmark Score	BC GovScore	\$ Value of Median Director's Holdings	CEO-Chair Duality (=1 if Dual)	% of Directors Independent
Governance	-	0.014	0.078	0.002	-0.067	-0.028	-1.133	0.236
	-	(0.70)	(0.26)	(0.87)	(0.13)	(0.55)	(0.00)	(0.57)
(Return, Last 2 years x Governance)	-	0.017	0.034	0.006	0.045	0.084	-0.152	-0.875
	-	(0.88)	(0.88)	(0.82)	(0.79)	(0.27)	(0.68)	(0.37)
Control Variables	Included	Included	Included	Included	Included	Included	Included	
Years Included	2000-02	2000, 2002	2000, 2002	2001-02	2002	2000-02	2000-02	2000-02
Sample Size	3,364	2,036	2,036	2,195	788	3,166	3,228	3,228

Figure 1: Relationship Between Dollar Board Ownership By Quartiles And Return on Assets for the Subsequent Two Years

